

# PURCHASING

DECEMBER, 1948



J. S. Rutherford:

How We Use What We Buy

See Page 89

Pages 83-87

Table of Contents

A CONOVER-MAST PUBLICATION • 50 CENTS

**Have you  
overlooked  
this important  
help in...**

**REDUCING  
COSTS?**

**INCREASING  
PRODUCTION**

WHEN your maintenance men have to stop a machine for repairs or an unscheduled overhaul, you lose production, your costs go up. But this two-way expense may be largely unnecessary.

With effective lubrication—the *right* use of the *right* lubricants—your machines stay on the job, your production goes up, your

costs come down. Get effective lubrication by using Texaco Lubricants and Texaco Lubrication Engineering Service.

Your Texaco Lubrication Engineer knows lubricants—and production. Call him in to work with your men. His suggestions will be honest and practical. Let him help you as he has helped in so many other plants.

Just pick up your telephone—*now*—and call the nearest of the more than 2300 Texaco Wholesale Distributing Plants in the 48 States; or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.



**TEXACO Lubricants, Fuels and  
Lubrication Engineering Service**

Tune in...TEXACO STAR THEATRE presents MILTON BERLE every Wednesday night. METROPOLITAN OPERA broadcasts every Saturday afternoon.

# From Century's Complete Line It Was Easy to Select

## 7 DIFFERENT

**to Drive This  
Automatic  
Drill Press**

# Century MOTORS

The automatic drill press shown here is equipped with the following standard Century motors:

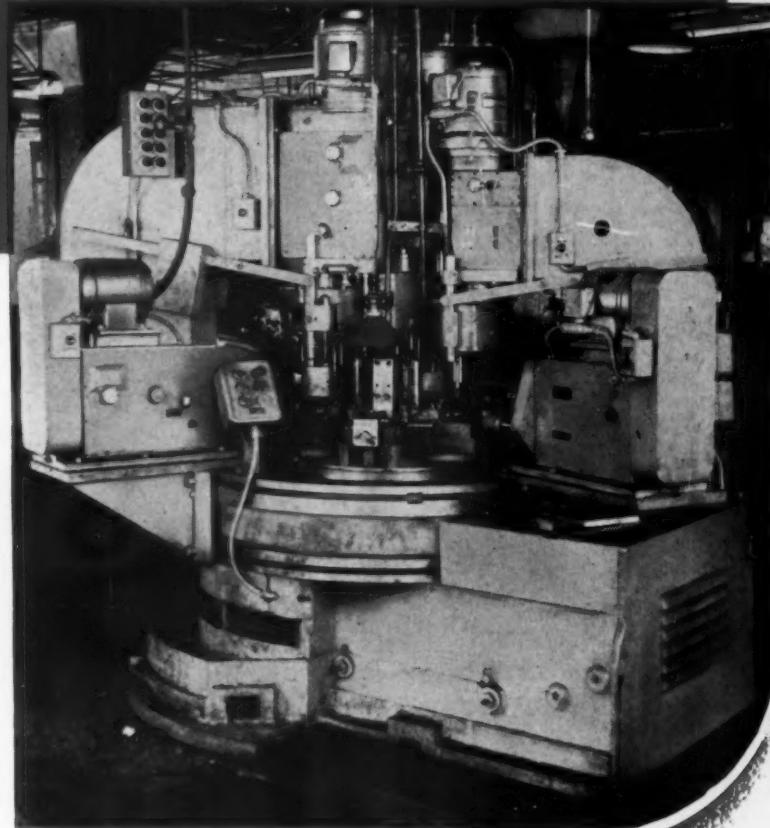
- 1 — one horsepower 1735 RPM horizontal motor on a cross feed
- 1 — one horsepower 1735 RPM vertical motor on a vertical feed
- 2 — one horsepower 1155 RPM horizontal motors on cross feeds
- 1 — one and one-half HP 1155 RPM horizontal motor on cross feed
- 1 — one horsepower 3500 RPM vertical motor on vertical feed
- 1 — two HP 1740 RPM vertical motor on vertical feed
- 1 — two HP 1155 RPM horizontal motor rotating the circular table

The correct Century motor for your job supplies the *right* amount of power and starting torque at the right speed combined with the *right* frame mounting and right protection from surrounding atmospheres.

Century's wide range of types and kinds of electric motors in sizes from 1/6 to 400 horsepower can simplify complicated electric power problems.

Specify Century motors for all of your electric power requirements.

Popular types and standard ratings are generally available from factory and branch office stocks.



**CENTURY ELECTRIC COMPANY**  
1806 Pine St. • Saint Louis 3, Missouri

-600

#### OFFICES AND STOCK POINTS IN PRINCIPAL CITIES

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# Airflyte



## USES PERFECT OIL SEALS

for the rear wheels, rear axle shafts and transmission and torque tube on the new 1949 Airflyte Cars.

Years of experience have proved to the major automotive manufacturers that this protection assures maximum performance and service life.

"Perfect" Oil Seals are in successful operation on all types of automotive vehicles, heavy construction machinery, machine tools, marine engines and many other types of mechanical equipment.



OUR 70<sup>TH</sup> YEAR OF INDUSTRIAL SERVICE

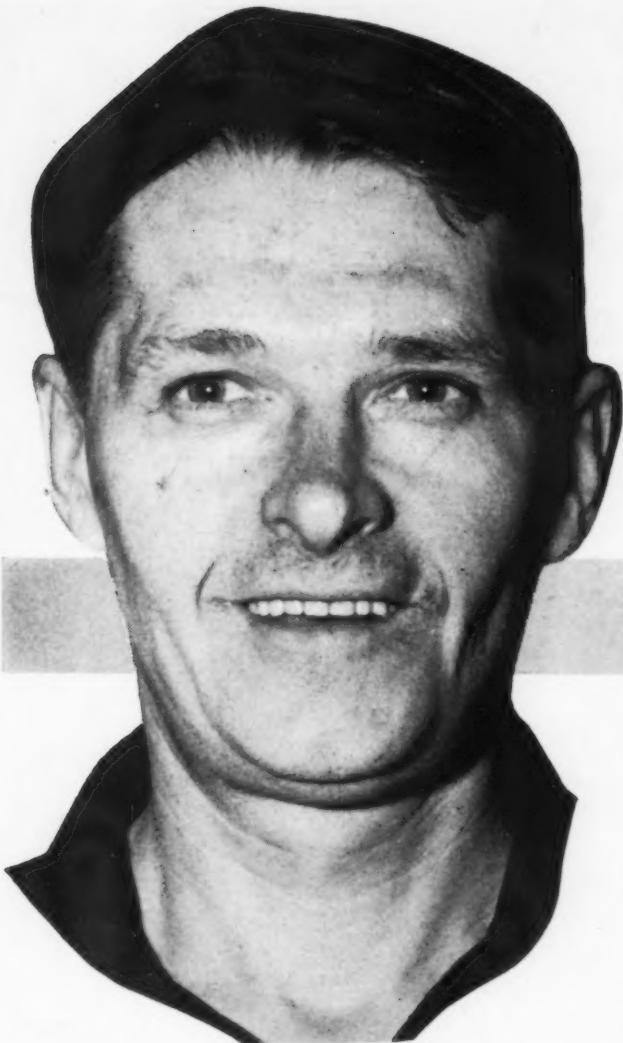
CHICAGO RAWHIDE MANUFACTURING CO.

1318 ELSTON AVENUE • CHICAGO 22, ILLINOIS



Manufactured and distributed in Canada by Super Oil Seal Mfg. Co., Ltd., Hamilton, Ont.

NEW YORK • PHILADELPHIA • DETROIT • LOS ANGELES • CLEVELAND • BOSTON • PITTSBURGH • SAN FRANCISCO • MINNEAPOLIS • CINCINNATI • HOUSTON • DENVER • SYRACUSE • PEORIA



**"I like  
the **UNIFORMITY**  
of Inland Steel"**

**THE MEN WHO WORK WITH  
INLAND STEEL KNOW ITS QUALITY!**

Operators of forming rolls know that the steel they process must have a uniform temper—strong enough to do its job, yet ductile enough to fabricate without fluting. That's why they prefer Inland Steel. Uniform sources of raw materials . . . uniform steelmaking procedures using the same modern equipment . . . uniform workmanship—made possible by Inland's completely integrated, closely knit plant—explain why the Inland steel received today will be of the same uniform quality as that received last month . . . or last year.

INLAND STEEL CO., 38 S. Dearborn St., Chicago, Ill. Sales Offices: Chicago, Davenport, Detroit, Indianapolis, Kansas City, Milwaukee, New York, St. Louis, St. Paul.



**INLAND  
STEEL**

OTHER PRODUCTS: BARS • STRUCTURALS • PLATES • STRIP • TIN PLATE  
FLOOR PLATE • PILING • RAILS • TRACK ACCESSORIES

# A New Year's message to our friends

As a difficult year draws to a close we take this opportunity to express appreciation to our many customers for their business and for their patient understanding.

The unbelievable demand for steel created an almost insurmountable problem for the industry.

We tried to meet this situation to

the best of our ability. New warehouses increased our facilities in 1948 and further improvements are planned for 1949. We are now at your service from coast to coast, determined to serve you better.

Meanwhile, let us extend our sincere best wishes for a happy holiday season and a successful New Year.

**UNITED STATES STEEL SUPPLY COMPANY**

BALTIMORE · BOSTON · CHICAGO · CLEVELAND · LOS ANGELES · MILWAUKEE  
NEWARK · PITTSBURGH · ST. LOUIS · SAN FRANCISCO · TWIN CITY (St. Paul)

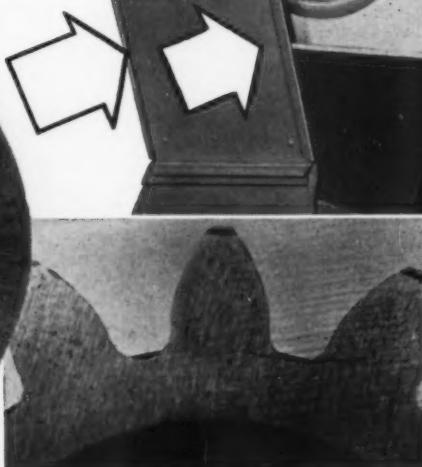
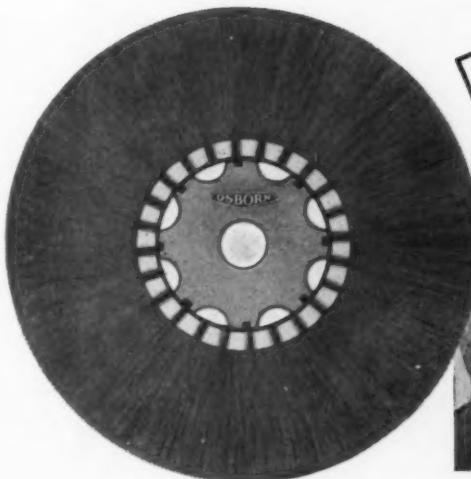


**Gear "Dentist" cleans teeth**

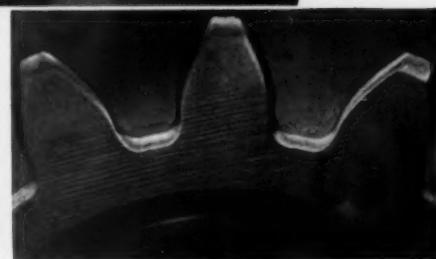
**6 TIMES FASTER**

*with*

**OSBORN  
BRUSHES**



**BEFORE**



**AFTER**

**Osborn Fascut Power Brushes up production 600% in deburring  
spur gears at G. A. Gray Co., Cincinnati, Ohio**

THE G. A. Gray Company, Cincinnati, Ohio, is a leading manufacturer of planers and milling machines for the metal working industry.

Among the many meticulous machining operations performed by the G. A. Gray Company is that of removing burrs and fragmented metal from the surface of gear teeth, ending with a mirror-like finish that insures efficient, smooth running gear boxes.

Over the years, spur gears were cleaned of burrs, scale and extraneous metal by the tedious, time consuming hand method. Today, Osborn 16" Fascut Treated Tampico Brushes used with an abrasive compound and whirring at 1725 R. P. M. remove burrs, round corners uniformly, blend tool marks and produce a highly polished surface in one-sixth the time required previously.

This is just one of the hundreds of industrial applications in which Osborn Brushes are cutting costs by accelerating production. If you have a stubborn production problem that is siphoning off profits, write, wire or phone us today. An Osborn Sales Engineer will be happy to call and show you how power brushing can be fitted into your production picture profitably. There is no obligation.

**THE OSBORN MANUFACTURING COMPANY**  
*5401 Hamilton Avenue*  
*Cleveland, Ohio*

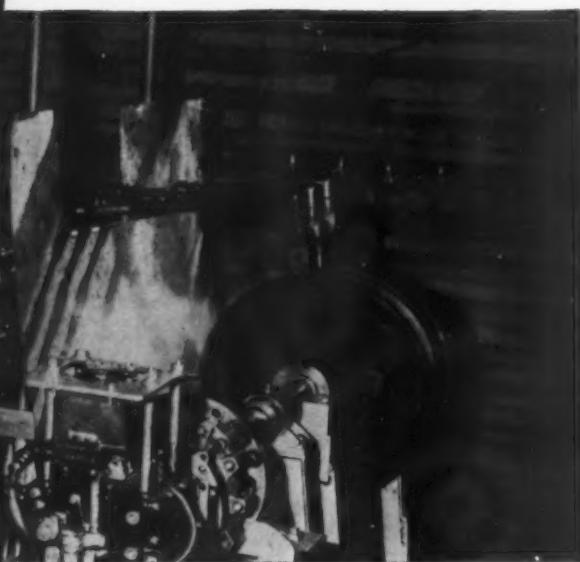


WORLD'S LARGEST MANUFACTURER OF BRUSHES FOR INDUSTRY • POWER DRIVEN BRUSHES • PAINT BRUSHES • MAINTENANCE BRUSHES

# Product "customer-value" built up with flame hardening



**THE THEW SHOVEL COMPANY**, Lorain, Ohio, wanted to improve the wearability of the sheave throats on Lorain power shovels and cranes, which are located at the upper end of the boom. By so doing, the company felt it would reach the acme of "owner-benefit" in its finished product — the value of a longer lasting part subjected to severe wear.



**A. B. Neiman**, Airco Technical Sales Representative, recommended oxyacetylene flame hardening. With this modern process, hardening could be localized to the sheave throat, *without* affecting the balance of the sheave's ductility. This was highly important for finished machining. Using a set-up of three Airco No. 4383 torches, with hardening tips especially designed for this job, three sheaves are simultaneously

hardened to a predetermined degree that insures maximum wear-resistant qualities.

Since flame hardening was introduced, the company still has gone further in its efforts to increase the customer-value of its products by expanding this modern, localized hardening process to include: gears, jaw clutches, and other parts requiring longer "in-service" life.

#### TECHNICAL SALES SERVICE — ANOTHER AIRCO PLUS-VALUE FOR CUSTOMERS

To assure its customers of high efficiency in all applications of the oxyacetylene flame or electric arc, Air Reduction makes available the broad, practical experience of its nationwide Technical Sales Division personnel. The collective experience and knowledge of these specialists has helped thousands to a more effective use of Airco processes and products. Ask about this Airco "Plus-Value" service today. Write your nearest Airco office. (In Texas: Magnolia Airco Gas Products Company . . . On West Coast: Air Reduction Pacific Company)



## AIR REDUCTION

Offices in All Principal Cities

Headquarters for Oxygen, Acetylene and other Gases...Carbide...Gas Welding and Cutting Machines, Apparatus and Supplies...Arc Welders, Electrodes and Accessories



## HOW ROEFLAT SLASHES SCREENING COSTS!

AT THE LEFT, ABOVE, you see part of an ordinary wire screen—woven like cloth—each wire has a continuous wave...and in service, *the high spots get the wear.*

At the right, you see a new Roebling way of making wire screens...the wire lies *flat* except for short crimps at the intersections. This modern screen is called ROEFLAT...has 75 per cent more wearing surface...prolongs the working life of screens as much as 90 per cent!

And ROEFLAT Aggregate Wire Screens save you money in other ways. Their smooth, level

surface lessens clogging and blinding. Their precision openings assure uniform grading and increase your screening efficiency.

Wherever ROEFLAT is recommended, its advantages can be enjoyed in practically any construction, such as ROETON, ROESLOT or square mesh, with  $\frac{1}{8}$ " openings or larger. Investigate ROEFLAT before placing your next order for screens. Write for Catalog W-903.

JOHN A. ROEBLING'S SONS COMPANY  
TRENTON 2, NEW JERSEY  
*Branches and Warehouses in Principal Cities*

\* WIRE ROPE AND STRAND \* FITTINGS \* SLINGS  
\* SUSPENSION BRIDGES AND CABLES \* AIRCORD,  
AIRCORD TERMINALS AND AIR CONTROLS \* AERIAL WIRE  
ROPE SYSTEMS \* ELECTRICAL WIRE AND CABLE  
\* SKI LIFTS \* HARD, ANNEALED OR TEMPERED  
HIGH AND LOW CARBON FINE AND SPECIALTY WIRE,  
FLAT WIRE, COLD ROLLED STRIP AND  
COLD ROLLED SPRING STEEL \* SCREEN, HARDWARE  
AND INDUSTRIAL WIRE CLOTH \* LAWN MOWERS

# ROEBLING

A CENTURY OF CONFIDENCE





FAMOUS QUOTES

HISTORICALLY SPEAKING

"ALL FOR ONE, AND  
ONE FOR ALL" \*

GENERALLY SPEAKING

"the container is part of  
the product"

... it's more than a slogan, more than a catch phrase—it's your positive assurance of a better container for your product. Better because General Engineered shipping containers assure protection and economy by combining strength with light weight. When needed, special inner-packing, blocking, and bracing are also prescribed.

Furthermore, the container and the product can frequently move down the production line together—as a unit—saving time and man-hours!

General boxes are engineered to the packing requirement; they are actually "a part of the product." For further details on this important subject, send for your free copy of "The General Box."

\*The rallying cry of Athos, Porthos and Aramis,  
the Three Musketeers, made famous by the  
great novelist Alexander Dumas.



General  
Wirebound  
Crate



General Cleated  
Corrugated  
Container



General  
Corrugated  
Box

**GENERAL BOX COMPANY**... engineered shipping containers



GENERAL OFFICES:

48 W. Illinois St., Chicago 10, Ill.

DISTRICT OFFICES AND PLANTS: Brooklyn, Cincinnati, Detroit,  
East St. Louis, Kansas City, Louisville, Milwaukee,  
New Orleans, Sheboygan, Winchendon, Natchez.  
Continental Box Company, Inc.: Houston, Dallas.



General  
Nailed  
Box

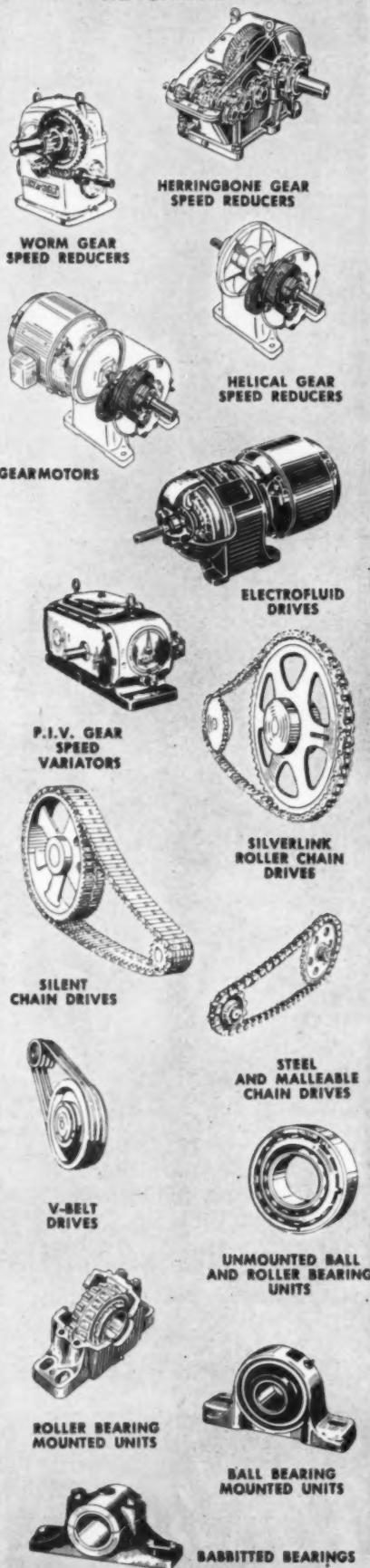


General  
All-Bound  
Box

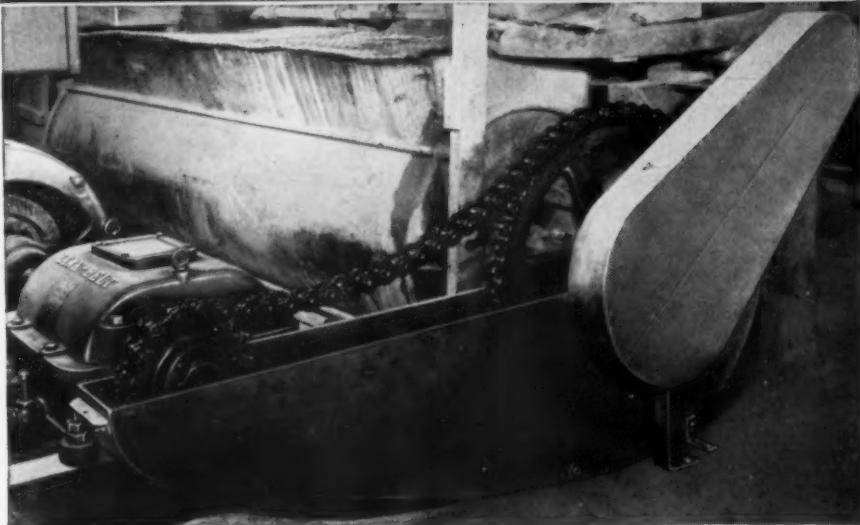


Generallift  
Pallet

**OTHER TYPES OF  
LINK-BELT  
POWER TRANSMISSION  
MACHINERY**



**STEADY STREAM of POWER  
to this PUG MILL . . .**



**from LINK-BELT *silverlink*  
--- ROLLER CHAIN DRIVE**

Pushing clay through this pug mill takes power, plenty of it, and a steady push. Slippage is out of the question on such applications, so Denver Fire Clay Company chose Link-Belt Silverlink roller chain and an L-B herringbone gear reducer for this important job. They obtain positive power transmission, plus assurance of long life, minimum upkeep, and lower year-by-year costs.

Plant engineers and production executives in every industry faced with the need for increased production and lowered costs, will appreciate the old fashioned advantages of low investment, low operating costs, high efficiency and long life found in Link-Belt chain and enclosed gear drives.

Consult Link-Belt power transmission engineers on any problem of mechanical power transmission.

Silverlink is an accurately made finished steel roller chain of high tensile strength and excellent wear value made to ASA standards for power transmission at either high or low speeds. Widely used on all types of machinery for drives and conveyors. Made in pitches  $\frac{3}{8}$ " to 3" in single and multiple widths for drives to 1000 H.P. and above and various attachments for conveyor applications. Stock sizes.

**LINK-BELT COMPANY**

Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Dallas 1, Minneapolis 5,  
San Francisco 24, Los Angeles 33, Seattle 4, Toronto 8.  
Offices, Factory Branch Stores and Distributors in Principal Cities.

11,127-A

**LINK-BELT**



**Power Transmission Machinery**

# Sandpaper Makes Music

ONE OF THE WORLD'S LARGEST MANUFACTURERS OF RECORD PLAYERS USES JEWEL NATURAL GARNET TO BRING OUT THE BEAUTY IN THE FINE WOODEN CABINETS. JEWEL GARNET DOES A BETTER JOB THAN MORE EXPENSIVE SYNTHETIC GRITS ... AND DOES IT FASTER!



THE RECORDS PLAYED IN THESE MACHINES, OR ON YOUR HOME PHONOGRAPH, ARE ALSO PROCESSED WITH SANDPAPER. WHEN RECORDS COME OUT OF THE PRESSING MACHINES, THE FLASH ON THE EDGES IS Sanded OFF... IN MANY CASES WITH A JEWEL FLINT PAPER SPECIALLY DESIGNED FOR THE JOB. THIS PAPER, WHICH HAS AN EXTRA HEAVY BACKING, CUT SANDING COSTS OVER 80% FOR ONE RECORD COMPANY.



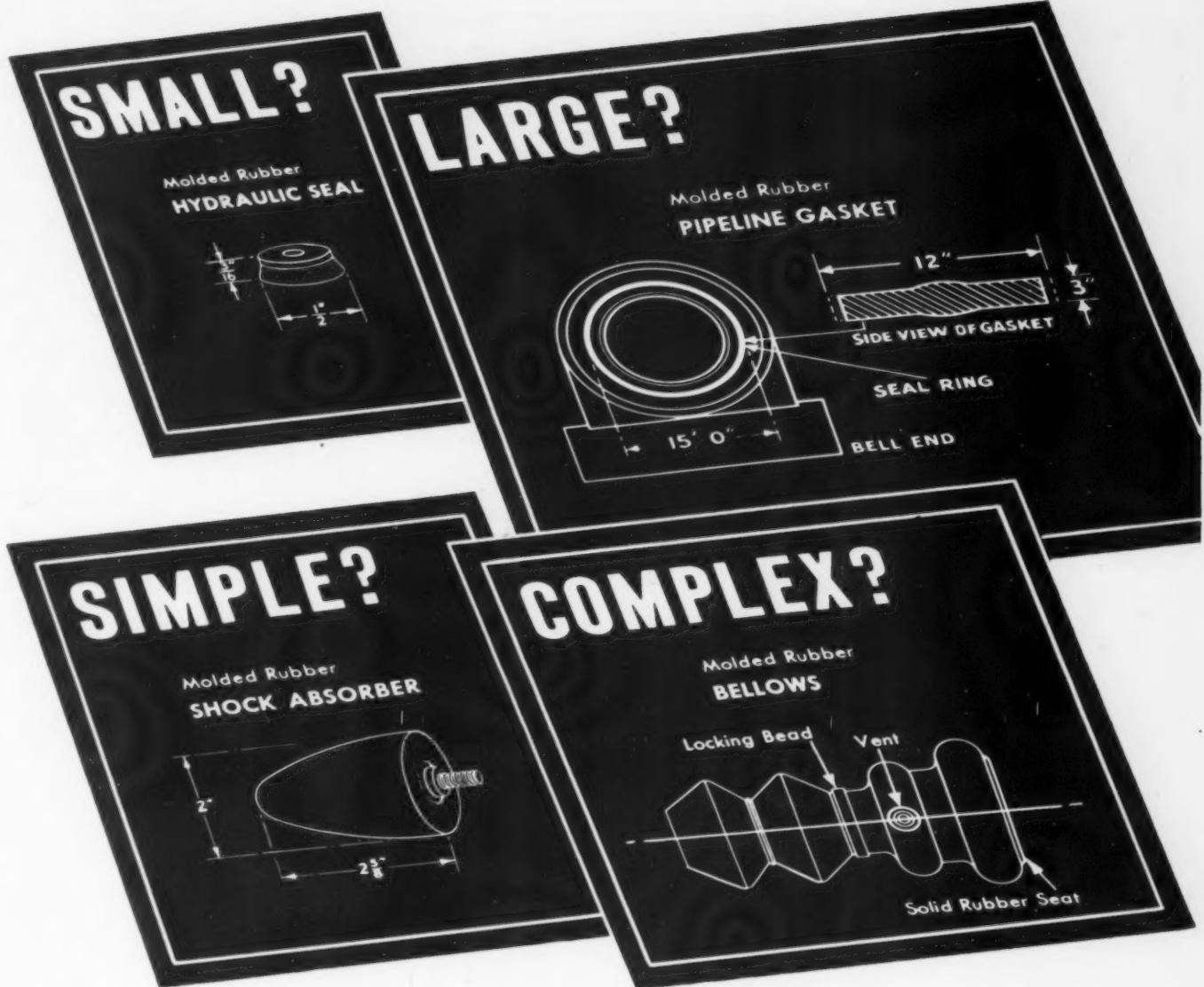
AND A MANUFACTURER OF TROMBONES HAS FOUND THAT A VERY FINE GRIT JEWELOX CLOTH IS IDEAL FOR HAND POLISHING TROMBONE SLIDES.

SO REMEMBER JEWEL WHEN YOU ORDER COATED ABRASIVES. THERE'S A JEWEL PRODUCT FOR EVERY SANDING, POLISHING AND GRINDING NEED. AND PROPERLY USED JEWEL ABRASIVES WILL SPEED YOUR WORK, CUT YOUR COSTS!



# Abrasive Products, Inc.

SOUTH BRAintree 85, MASSACHUSETTS • MAKERS OF JEWEL COATED ABRASIVES



# Precision-Molded Rubber Parts on a Mass-Production Basis

**F**ROM a midget to a mammoth, Goodyear can mold rubber parts to extremely close tolerances — with accuracy impossible in former methods, coupled with the economies of mass production.

High-speed multiple-cavity machines—acknowledged Goodyear leadership in natural rubber—25 years *plus* of experience in synthetics—ALL help the G.T.M.—Goodyear Technical Man—to

meet your needs for fast delivery of volume-with-precision supplies of molded rubber parts.

Send your specifications to the G.T.M., c/o Goodyear, Molded Goods Dept., St. Marys, Ohio.

# GOOD YEAR

THE GREATEST NAME IN RUBBER



**ask "Purch"**

**TO GET YOU THIS *Free* INFORMATIVE LITERATURE**

USE PREPAID POST CARD—PAGES 19 & 20

1. **OFFICE SUPPLIES**—Catalog describes the Morisset line of supplies such as individual ink wells and pens, fountain pen sets, moisteners, pad holders, letter trays, etc. Imprint service available so units may be stamped for company property identification, and also for advertising purposes. Bert M. Morris Co.

2. **WORK GLOVES**—Plasticote is the name of plastic impregnated work glove announced by Plasticote Glove Co., Inc., which is said to give up to ten times the wear of rubber coated gloves, and excellent protection against heat, flame, and chemical solutions, yet impart the comfort of soft cotton gloves. Bulletin available.

3. **FASTENINGS**—Stainless steel fastenings now available are the subject of bulletin released by Anti-Corrosive Metal Products Co., Inc. These include nuts, bolts, machine screws, cap screws, wood screws, rivets, set screws, washers, etc., and also line of pipe fittings.

4. **LETTERHEADS**—Sample booklet of Ezerase, a rag content paper especially treated for easy erasability, for letterheads, second sheets and onion skin sheets, will be sent to you by the Millers Falls Paper Co.

5. **HAND CUTTING TOOL**—New cutting tool designed to fill the need for a cutting tool between the wire cutting plier and the bolt cutter is described in bulletin issued by Manco Mfg. Co. Cuts up to  $\frac{1}{4}$ " mild steel rod or annealed wire. It is 12" in length. 50# pressure at handles gives two tons cutting force.

6. **SPEED REDUCERS**—Catalog G-1 covers herringbone gear speed reducers and speed increasers made by Lufkin Foundry & Machine Co.; 50 pages. Sections cover selection of gear units, service factors, specifications, and weights.

7. **PYROMETERS**—Catalog 1101-J, 36 pages, describes in detail the C. J. Tagliabue

Corporation's line of Celectray potentiometer pyrometers, which embody a phototube, a beam of light and a mirror galvanometer.

8. **POWER LINE ACCESSORIES**—Series of five catalogs indexed in sturdy binder, covers The Reliable Electric Company's complete line of solderless connectors, straight-line splices and deadends, splicing sleeves, cable specialties and telephone protective and terminal equipment.

9. **ALUMINUM DATA BOOK**—Reynolds Metals Co. has prepared a handy pocket-size 162-page book entitled "Aluminum Alloys & Mill Products Data Book", which is available to purchasing agents and technical men without cost. Its 162-pages contain 163 tables of data on tempers, sizes, shapes, physical properties, chemical properties, mechanical properties and fabricating characteristics, plus 33 pages of explanatory text on related subjects.

10. **WHEEL BRUSHES**—Bulletin describes the Fullerdisc wheel brushes of crimped steel wire, tamico, and crimped phosphor bronze. Fuller Brush Co.

11. **TOOL STEEL CHART**—21" x 31" chart developed by The Carpenter Steel Co., is designed to take the guesswork from tool steel selection, and to overcome the problem of quickly identifying different grades of tool steel bars. It is named the Tool Steel Selector and Identification Wall Chart, and contains a 12-color reproduction of the Carpenter Matched Set Diagram. It helps to avoid stock mix-ups, and simplifies inventory taking.

12. **MATERIALS HANDLING**—Pocket-size catalog covers the Barrett line of materials handling equipment including hand, hydraulic and electric lift trucks, pallet trucks, skids, stacking frames, lifting and die tables, barrel trucks, storage racks, dollies, etc. Barrett-Cravens Co.

13. **MAGNETIC PULLEYS**—Features and applications of electromagnetic pulleys and

alnico magnetic perma-pulleys for automatic separation of ferrous and non-ferrous materials, are given in two new eight-page catalogs, Nos. C-1001A and C-1007A issued by the Dings Magnetic Separator Co. They were developed to help users determine the type and size of magnetic pulley most suitable for their specific requirements.

14. **NONFERROUS POWDERS**—"Applications and Properties of Nonferrous Powder Parts" is the title of booklet issued by the New Jersey Zinc Co. It deals with the technical aspects of nonferrous powders, and gives a number of cost case-histories.

15. **RIVNUTS**—New Rivnut data book has been issued by the B. F. Goodrich Co. The Rivnut is a blind fastener which can be used either as a rivet or nut plate. The book also announces new power and manual tools for use with Rivnuts, one of which is a pneumatic-hydraulic heading tool for production line use.

16. **AUTOMOTIVE BRAKES**—The Automotive Division of Wagner Electric Corp. announces publication of new issue of brake parts and lining catalog AU-500. It covers popular models of passenger cars and trucks.

17. **GRINDERS, POLISHERS**—Bulletin 112 covers the Cadet line of grinders, polishers and buffers. Standard Electrical Tool Co.

18. **STEEL BARS**—8-page bulletin on Cold Finished Steel Bars contains a description of the finishing processes, guide to selection, AISI and SAE standard steel compositions, table of average mechanical properties, and a condensed listing of the analyses, finishes and shapes carried in stock. Joseph T. Ryerson & Son Inc.

19. **IMPACT CRUSHER**—Bulletin 8002 describes Bradmill unit in which impact crushing is combined with screening action to produce a 100% passing granular product without oversize and a minimum of extreme fines. It is available in 3 sizes. Pennsylvania Crusher Co.

20. **AIR VALVE**—Bulletin describes new general purpose air hose valve and nozzle which has no springs and no packing, and which requires but little thumb pressure to open. It is designed for any air line up to 100 lbs. psi. The valve employs a stainless steel ball which operates in accordance with the Bernoulli theorem. Paul Valve Corp.

21. **PULLEYS**—Cast Iron Pulleys for Industry is the title of Bulletin P-848 which describes line of Blue Face Pulleys made by the Sprout, Waldron & Co. Two pages are devoted to a belt-saver pulley. Typical pulley installations are illustrated.

22. **MATERIALS HANDLING**—Bulletin describes the Bell prime-mover, a mechanically dumping barrow mounted on a power-driven three-wheel chassis and steered by means of a rear caster wheel. It will carry a load up a 20% grade; turns in its own length. One man can move same amount of material as four men with wheelbarrows. Platform adds to versatility of the Prime-Mover. Bell Aircraft Corp.

23. **PLASTICS**—"The Fabrication of Catalin", Methods and Equipment is title of new 60-page issue of Catalin booklet. It covers production of cast phenolics from design to casting techniques, machining, fabrication, die cutting, applying decorations, etc. It will give you a complete understanding of Catalin (Please turn to page 16)

**ASK "PURCH" FOR THIS FREE, UP-TO-DATE LITERATURE  
Four Pages—14-16-19-20  
Use convenient prepaid postcards on pages 19 & 20**

Subject: G. P. MACHINIST'S FILE

"THE RIGHT FILE  
FOR THE JOB"

conserves materials, saves workmen's time,  
improves results—cuts production costs.  
This is one of a series of advertisements on  
different types of files. Save it, with the  
others, for shop and purchasing references.

Prepared by Nicholson File Co.



G.P. Machinist's File



Filing aluminum with the  
G.P. Machinist's File

### THE "HAPPY MEDIUM" IN GENERAL PURPOSE FILES

The G.P. (General Purpose) is the very latest Nicholson development in special-design files. Virtually "two files in one," it utilizes the fundamental principles of the regular Mill (single cut) and the regular Flat (double cut) files . . . and combines them to give *metal-removing speed* with *smooth finish*.

**USES.** The Nicholson G.P. Machinist's File is not intended to supplant regular or special purpose files which are designed to accomplish a particular filing job in the very best manner or the shortest possible time. But to the mechanic working on *aluminum, bronze, cast iron, malleable iron, mild steels, or annealed tool steels*, it is an excellent general purpose file for hundreds of fabricating and machine-shop jobs. It is a thoroughly tested-and-proved file for saving time and increasing production.

**CONSTRUCTION.** The Nicholson G.P. Machinist's File (also made in Black Diamond brand) has the shape of a regular Flat file — except that it does not taper in thickness. It comes in 8", 10", 12" and 14" lengths. The teeth are single cut (like a regular Mill Bastard file), but are divided by angular serrations. These produce shorter cutting edges, break up the filings — help remove stock rapidly and still leave a smooth finish.

Nicholson makes special purpose files for *Brass, Lead, Aluminum, Stainless Steel, Foundry Castings, Die Castings, Die Making, Lathe Filing, Curved and Shear Tooth Filing—and Swiss Pattern files of all shapes and sizes*. Available through your industrial distributor.

FREE BOOK, "FILE FILOSOPHY"—48 interesting pages on kinds, use and care of files. Your foremen need it.



NICHOLSON FILE CO., 28 Acorn Street, Providence 1, Rhode Island

(In Canada, Port Hope, Ont.)



**NICHOLSON FILES FOR EVERY PURPOSE**

**TO GET YOU THIS *Free***  
**INFORMATIVE LITERATURE**

USE PREPAID POST CARD — PAGES 19 & 20

(Continued from page 14)

lin cast phenolics. Catalin Corporation of America.

**□ 24. COPPER-IRON POWDER**—Metal Powder News Vol. VIII, No. 7, of Oct. 15, describes a copper-iron powder, which is not "a mixture but consists of high grade iron particles with a partial coating of pure copper." The copper content is 8%. No blending required; high green strength; high tensile strength, high hardness, low sinter shrinkage. Charles Hardy, Inc.

**□ 25. STEEL BUILDINGS**—32-page catalog tells about Ideco Steel Buildings, which are said to be readily assembled, for such uses as warehouses, shops, field offices, substations, hangars, etc. Bulletin B-48 describes applications in detail. International Derrick & Equipment Co.

**□ 26. GAS ANALYZERS**—Bulletin 213 issued by the Burrell Technical Supply Co. tells about the Burrell "Industro" gas analyzers—simplified, portable gas analyzers for on the job use. It is available in two models—Model B for determination of carbon dioxide, oxygen and carbon monoxide, and Model C for determination of all gases tested by Model B plus combustibles such as hydrogen and methane. Tests gaseous flue, flue gas, heat treating atmospheres; natural, producer, blast furnace and mixed gases.

**□ 27. FRACTIONAL MOTORS**—Bulletin 3a/9 covers the entire range of the Redmond Company's line of fractional hp motors, sold under the tradename "Micromotors". Sizes range from 1/500th hp to 1/50th hp. They are made in open-ventilated and totally enclosed models as well as in drawn steel and cast cases.

**□ 28. RETAINING RINGS**—New 28-page Truarc specifications and data catalog, with 28 pages of charts for all standard types of Truarc rings is now available from the Truarc Division of the Waldes Kohinoor, Inc.

**□ 29. ELECTRIC PLANTS**—Catalog describes Onan electric plants in sizes ranging from the portable Model AAE, 350 watts and weighing 77 lbs. to the 35,000 watt Diesel units. Other models ranging from 350 to 35,000 watts ac in all standard voltages, frequencies and phases are described. DC models in 115-volt current from 750 watts to 15,000 watts and in 230-volt from 200 watts to 15,000 watts are included. Battery charging plants and special accessories are also listed. D. W. Onan & Sons, Inc.

**□ 30. METAL STITCHING**—8-page booklet "Metal Stitching" illustrates method of stitching metal and non-metallic materials, which

replaces rivets, screws, bolts and spot welding. Complete line of stitching machines is shown. Acme Steel Co.

**□ 31. CONTROL SYSTEM**—Air actual control system of advanced design is the subject of new catalog ND4B, issued by the Leeds & Northrup Co. It is said to enable users in the oil, chemical and other industries to obtain faster start up, smaller process swings, no process drifts, longer-on-stream runs, faster recovery from upsets and shorter turn around time.

**□ 32. FILES**—American Swiss File & Tool Co. has just completed new bulletin on hand cut and ground from solid rotary files. Midget rotary files are also described.

**□ 33. PROPELLER FANS**—New designs in self-cooled motor propeller fans are headlined in catalog just released by the Ilg Electric Ventilating Co. Three types are featured in a range of sizes and capacities to handle the requirements of all exhaust fan applications.

**□ 34. SOLDERS**—Catalog 201 supplies details on solders of the Alpha Metals, Inc. It also contains solder selection guide listing the 16 metals most frequently soldered. Text gives recommendations for the best flux core solder or solder and flux suitable to soldering operations.

**□ 35. TAPPING-THREADING**—New bulletin describes the Warner & Swasey Company's No. 11 Tapping and Threading machine. Machine has capacity range from  $\frac{1}{8}$ " pipe thread to  $\frac{5}{8}$ " NC or NF. Electrical controls, speed changing and the cutting of left-hand and external threads are described.

**□ 36. PAINT REMOVER**—Bulletin describes non-flammable paint remover in heavy cream form that stays wet, clings to upright surfaces and requires no after wash. The Savogran Co.

**□ 37. BROACHING MACHINES**—Three new 4-page bulletins describe Pull-Down (RD-48), Pull-Up (RU-48), and Single-ram (RS-48) broaching machines. Bulletins give general outline of the uses and features of each type of machine. Colonial Broach Co.

**□ 38. CARBIDE TIPS, TOOLS**—28-page bulletin No. FE 127, lists and describes the Firth Sterling Steel & Carbide Corporation's standard line of sintered tungsten, carbide tips and tools, boring bits, adjustable tool holders, and special tips, nibs and wear parts made to customer's specifications.

**□ 39. MATERIALS HANDLING**—Job Study No. 1 published by Towmotor Corporation

shows how Eastern manufacturer of appliances, handling enormous quantity of raw materials of varying size, weight and shape and at least half-million pounds of steel weekly, keeps materials flowing through production and finished products to storage and shipping.

**□ 40. OIL-GAS BURNERS**—Catalog #408 describes combination oil-gas burners which make it possible to switch from gas to oil or oil to gas, without loss of production. Burners are said to reduce fuel cost and improve operations. Hauck Manufacturing Co.

**□ 41. GERMICIDE**—A liquid deodorizer, cleaner and germicide for telephones, which is said to remove all traces of telephone odors and tobacco particles, and to sterilize phone completely and immediately, is subject of literature issued by Tele-Cide Chemical Corp.

**□ 42. PUMPS**—18-page bulletin, No. 101, describes heavy duty flexible coupled pumps, special metal pumps, and a series of industrial pumps. Roy E. Roth Co.

**□ 43. DIESEL ENGINES**—Complete specifications on every commercially manufactured diesel engine, including hp ratings, model numbers and other important details are included in 32-page report available from Benjamin's for Motors.

**□ 44. CLAD METAL**—Price list covers Rosslyn metal which has a copper core bonded permanently to stainless steel surfaces. It is rolled in sheets of the standard widths, lengths, thicknesses and finishes. American Cladmetals Co.

**□ 45. PLASTICS**—Data sheets cover Acryvin casting solutions, Araclad quick-bake coatings for direct application on all metals, and Acrylic pearl which is a perfect simulation of ocean pearl and was formulated especially for the button and novelty industries. The machinability of the "A" casting resin is comparable to general woodworking. Acryvin Corporation of America.

**□ 46. TRAFFIC PAINTS**—A report on their formulation is available from American Gum Importers Laboratories, Inc.

**□ 47. FIRE BRICK**—Plastic fire brick and castable refractories are described in technical detail with typical applications and directions for their preparation and installation, in 6-page bulletin issued by Harbison-Walker Refractories Co. Fire brick applications include boiler settings, forge furnaces, cupolas, etc.

**□ 48. VIBRATION CONTROL**—The advantages and limitations of spring mountings, rubber mountings and cork materials in the control of vibration, together with data on their installation and uses are the subject of bulletin G-101 issued by Korfund Co., Inc. Selector chart tabulates more than 50 typical machine and equipment applications.

**□ 49. SANDING SEALERS**—The results of an extensive investigation of lacquer sanding sealers with particular reference to the ease of sanding and cold-check properties are covered in technical booklet released by Hercules Powder Co.

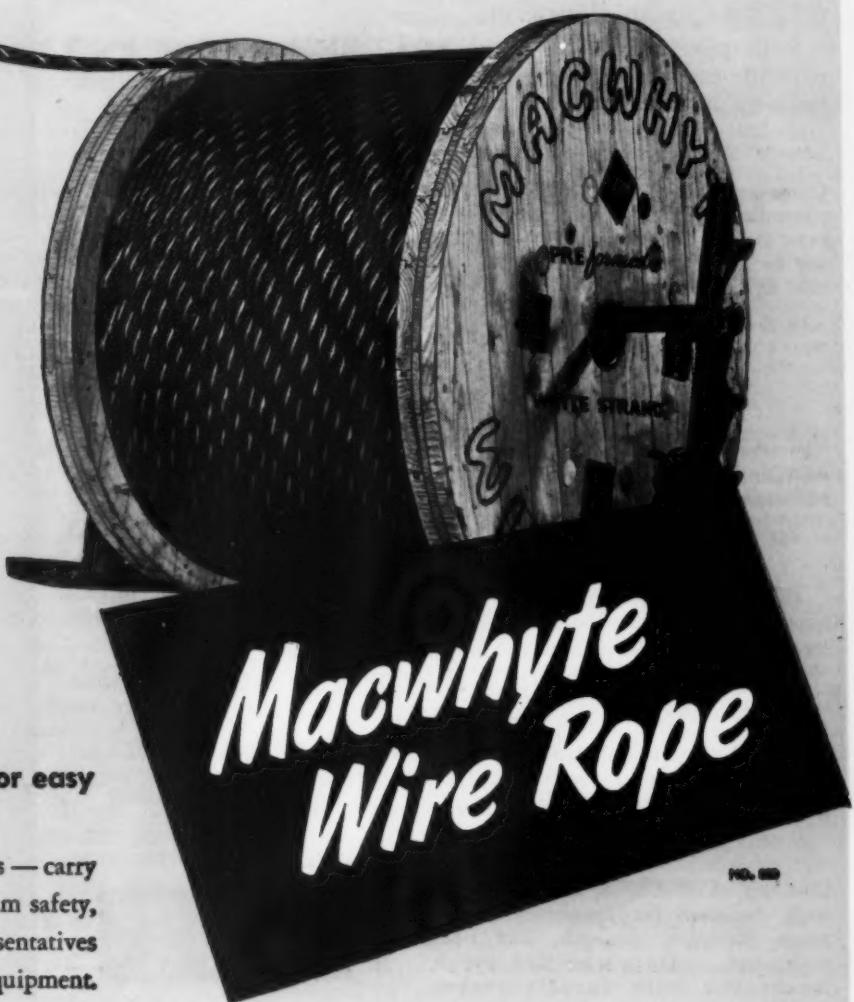
**□ 50. RUST PREVENTIVES**—New catalog "Rust-Oleum Stops and Prevents Rust" has been issued by Rust-Oleum Corp. It covers rust-preventive products for industrial, railroad, marine, farm and general use. Topical (Please turn to page 19)

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**S**TYLE PAYS off in your lighting panels, too, as these two examples of progressive BullDog engineering are proving every day.

## Utility plus good looks

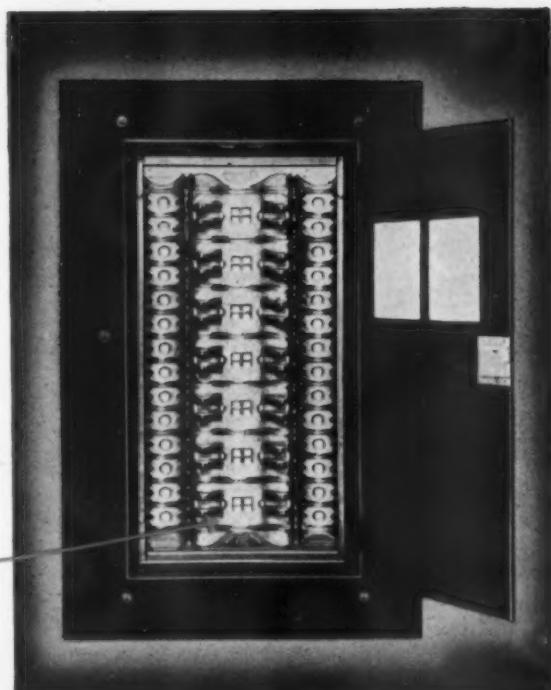
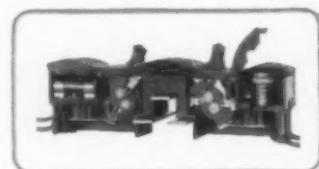
BullDog Superba Panelboards . . . fine appearance as well as good performance.

*Standard Superba* has fuse doors interlocked with switch handles for safety. Makes fuses "dead" before they become accessible.

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Both panelboards have exclusive OMNI-bus feature, which permits easy balancing of loads. Heavy-duty toggle switches have quick-make and quick-break action.

Cutaway view of standard SUPERBA phenolic unit, featuring OMNI-bus bars, rugged toggle switches—all adding to the appearance and utility of this lighting panel line.



## Ruggedness first

BullDog Rocker Type Panelboards . . . for factories, where heavy-duty performance comes first. Good appearance, while secondary, is not overlooked.

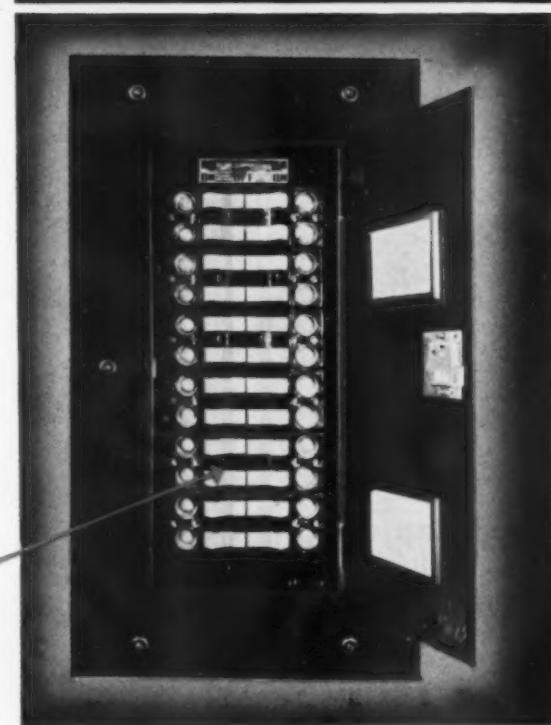
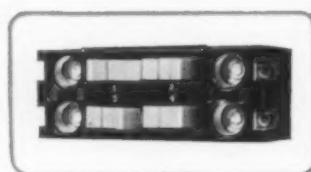
BullDog Rocker Type has branch circuits of molded material . . . arc-resisting, non-carbonizing, and non-tracking.

Breakage of switch handles is at a minimum in rugged Rocker Type Panelboards. Quick-make and quick-break, with smooth-working, knife-edge bearings.

When your lighting set-up calls for a panelboard that must "take it," specify BullDog Rocker Type.

For full technical information on BullDog SUPERBA or ROCKER TYPE Panelboards, call a BullDog Field Engineer. There's one nearby who will be glad to answer your questions.

Close-up of ROCKER TYPE molded unit, designed for durability, maximum dielectric strength, and heat resistance . . . plus a simplified switch mechanism with durable rocker handles.



BullDog's Field Engineers welcome the chance to sit in on planning stages of a building project. Their knowledge of electrical distribution layout can mean savings in installation and maintenance costs, as well as highest efficiency and reliability in actual operation. Why not take advantage of this pre-building service?

BullDog manufactures Vacu-Break Safety Switches • SafTo-Fuse Panelboards • Superba and Rocker Type Lighting Panels • Switchboards • Circuit Master Breakers • "Lo-X" Feeder BUStribution DUCT • "Plug-In" Type BUStribution DUCT • Universal Trol-E-Duct for flexible lighting • Industrial Trol-E-Duct for portable tools, cranes, hoists.

# BULLDOG



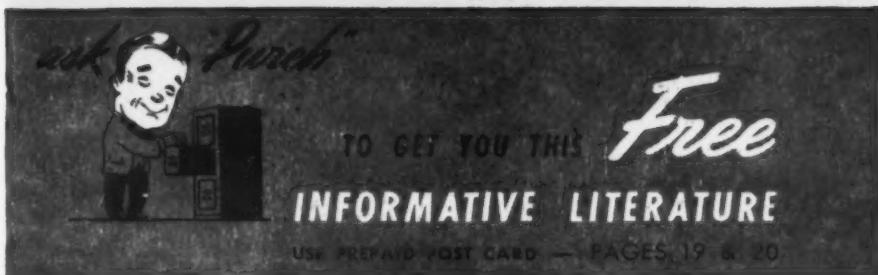
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PURCHASING



(Continued from page 16)

cally listed specifications include the use of 48 color cards augmented by 22 color panels of machinery and implement finishes. The cards show the various colors in which Rust-Oleum is obtainable. There is also a section covering use of preventives on all building materials requiring a liquid sealer.

**51. MACHINISTS TOOLS**—Publication of new 28-page Small Tool catalog representing its line of micrometers, vernier calipers, height gages and other tools for toolmakers and mechanics, is announced by George Scherr Co., Inc.

**52. INDUSTRIAL WASTES**—Bulletin 7301 issued by The Brown Instrument Co. is entitled "Instrumentation for Treatment of Sewage and Industrial Wastes." It covers applications and instruments in detail.

**53. USER'S GUIDE**—E. F. Houghton & Co. has issued a product index designed to guide purchasers in the various applications of its products. It shows products and their individual applications, and includes lubricants, metal working, textile processing, leather oils and greases and hydraulic and transmission products.

**54. PLUG-IN STRIPS**—Catalog CF-2 describes plug-in strip made by National Electric Products Corp. It pictures 3 ft. by 6 ft. standard lengths of multi-outlet circuit assembly. It also covers fittings.

**55. DRILL PRESSES**—Catalog 400 covers both bench and floor models of South Bend 14" precision drill presses. Components are described, along with specification data. South Bend Lathe Works.

**56. MAGNETIC STARTERS**—New line of a-c magnetic starters of the across-the-line non-reversing type, are the subject of Bulletin 4110 issued by the Ward Leonard Electric Co.

**57. SPEED REDUCERS**—Helical gear speed reducers, single reduction, are the subject of Catalog 1002 issued by Eberhardt-Denver Co.

**58. TRANSFORMERS**—Dry type trans-

formers, their applications, design and construction are the subject of bulletin 1110 issued by the Transformer Division of the Lindberg Engineering Co.

**59. TACHOMETERS**—Electric tachometers for all installations are the subject of Bulletin 104 issued by the Metron Instrument Co. Several heads are shown for industrial, marine, railway, diesel and aircraft applications and for direct head coupling from 1 rpm to 100,000 rpm.

**60. BILLS OF LADING**—Sample of Watts carbo-ready bills of lading snap-apart sets, will be sent to you by the Alfred Allen Watts Co., Inc. Can be used on any typewriter or hand written, providing clear, legible copies and perfect registration.

**61. NON-CORROSIVE PARTS**—About 200 standard products for corrosive and high temperature service are listed in new catalog of "Standard Specialties" issued by The International Nickel Co. It is termed the first complete compilation of products made of Monel, Nickel or Inconel available from stock or from standard designs. There are 47 classifications covering floats, nails, slings and hooks, thermostat parts, pipe and fittings, gaskets, valves, tags, wire rope, etc.

**62. PUMPS**—Pumps designed and built exclusively for the handling of corrosive solutions are the subject of 20-page bulletin No. 815 on Model 40 series M Centrifugal pumps issued by The Duriron Co., Inc. Wet ends are available in 12 alloys and all parts can be made interchangeable.

**63. PLATING SUPPLIES**—Price guide for plating and polishing supplies has been issued by the Udylite Corp.

**64. FLEXIBLE TUBING**—Penflex flexible metallic interlocked galvanized steel hose and bronze steam hose are the subject of Bulletin 52-9 issued by the Pennsylvania Flexible Metallic Tubing Co.

**65. HYDRAULIC EQUIPMENT**—Hydraulic Standards Code for Industrial Equipment is available from the John S. Barnes Corp.

**66. PLASTICS**—Catalog issued by Amos

Molded Plastics, deals with high production injection molding of modern thermoplastics. It gives understandable information on design principles to consider, gives definitions of different plastic properties, and contains chart showing properties of both thermoplastic and thermosetting materials. You should have copy.

**67. RIVETING MACHINE**—Pneumatic riveter, making for high speed, adjustable impact, low maintenance, is the subject of bulletin issued by the Hill Machine Co.

**68. CONVEYOR**—Light duty gravity portable roller conveyor for permanent or emergency uses is the subject of bulletin issued by Island Equipment Corporation. Sections are easily carried from place to place and sufficiently strong to withstand average usage and loads.

**69. LABEL DISPENSER**—Automatic electric label dispenser that mechanizes hand labeling and is said to cut labor costs as much as 75%, known as the Kum-Kleen Dispenser, is subject of bulletin issued by Avery Adhesive Label Corporation.

**70. MOTORS**—Tri-Clad high speed synchronous motors, 900 series, ratings 20 hp to 1500 hp at 60 cycle speeds of 1800 rpm, and proportionate hp ratings for speeds through 514 rpm, are the subject of Bulletin GEA 5113. Apparatus Dept., General Electric Co.

**71. ROLLER BEARINGS**—New self aligning roller bearing unit incorporating the "Microlock" feature is subject of bulletin just issued by Shafer Bearing Corp. It provides a foolproof means of establishing and maintaining the required bearing adjustment. Shafer Bearing Corp.

**72. LATHE TURRETS**—16-page catalog #48 has been issued by Enco Mfg. Co. Illustrations show typical applications, including carriage hexurret now available for lathes from 9" to 32" swing. Selection charts simplify selection. Enco Mfg. Co.

**73. TORQUEMETER**—Bulletin 275, 4 pages, describes four standard Baldwin torqueometers of 2000, 5000, 12,000 and 30,000 in. lb. capacity; specially designed torqueometers designed for capacities 30 to 750,000 in. lb. capacities with shaft diameters of  $\frac{1}{4}$ " to  $\frac{1}{8}$ ", and instrumentation for indicating and recording torque measurements. It tells how to specify requirements. Testing Equipt. Dept., Baldwin Locomotive Works.

**74. SPRAY BOOTHS**—Catalog 480 describes centri-merge spray booths for the elimination of paint overspray, made by Schmieg Industries, Inc.

(Please turn to page 20)

12/48

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(Continued from page 19)

75. **BABBITT**—Folders describe Diesel babbitt and Dix Genuine babbitt made by the Dixie Metals Co.

76. **TUBING**—Bulletin, 32 pages, on steel tubing contains information on seamless and welded carbon steel tubing, stainless tubing and pipe, structural tubing, and seamless and welded boiler tubes. Joseph T. Ryerson & Son, Inc.

77. **BUSINESS PAPER**—Samples of letterheads, purchase order and other forms are contained in the Howard Bond Sampler. The bond white is available in all standard sizes, four weights and in six finishes, and the bond colors are available in all standard sizes in four weights—13, 16, 20 and 24. Papers are available in a "rainbow" of colors. Howard Paper Mills, Inc.

78. **SLING CHAINS**—Wrought iron sling chains are the subject of bulletin SC-48 just issued by The Cleveland Chain & Mfg. Co. It includes data on chain inspection, use and care, and recommended load limits.

79. **LIGHTING**—New catalog on lighting and fixtures for office, factory, schools, etc. has just been issued by Globe Lighting Products, Inc.

80. **INDUSTRIAL HARDWARE**—Drop Forged Industrial Hardware and Specialties is subject of catalog just released by Merrill Brothers.

81. **VALVES**—Illustrated 12-page folder No. 577 introduces the Lunkenermer "Renewo" Valve Threesome. Renewable features of valve line reduce costs by lowering inventory, simplify ordering and handling, and facilitate repairs. The line is featured in globe and angle types rated at 200 and 300 lbs. psi. S. C. Baer Co.

82. **NUT SETTER**—Electric torqueless impact nut setter featured by light weight, high speed, portability and sturdiness for heavy duty, is described in bulletin issued by Speed-O-Matic Sales, Inc.

83. **PIPE, FITTINGS**—Catalog section M-8800B covers the National Carbon Com-

pany's "Karbate" brand pipe and fittings. All pipe sizes and fittings are illustrated. "Karbate" impervious graphite resists the action of most acids, alkalis and other chemicals which are not highly oxidizing in their behavior. It may be used under conditions which keep the temperature in the body of the material below 338 deg. F.

84. **PLASTIC TABLEWARE**—Hemcoware tableware, molded of thermosetting material, which will not go out of shape and is not injured by short immersion in boiling water, is illustrated in catalog issued by the Hemco Plastics Division of the Bryant Electric Co. The ware is available in soft pastel shades. Special heavy duty type is available for institutional use.

85. **MACHINE TOOLS**—Precision lathes, shapers and milling machines, and accessories and attachments are the subject of new catalog G-48 announced by Sheldon Machine Co., Inc.

86. **AIR-COOLED ENGINES**—Wisconsin Heavy-Duty air-cooled engines, made in a size and type for every power purpose within a 2 to 30 hp range are the subject of interesting booklet which illustrates hundreds of uses in addition to telling how they are made. Cooling air is created by large capacity fan that is cast into the flywheel of the engine and is an integral part thereof. Easy starting is assured by weather-sealed magneto and impulse coupling. Wisconsin Motor Corporation.

87. **SMOKE CONTROL**—Bulletin 20-A describes equipment for smoke control for boiler and industrial coal burning furnaces, including smoke indicators, recorders, and overfire jet controls. Brooke Engineering Co., Inc.

88. **ELECTRONIC CONTROLS**—That is the title of bulletin Z6500 describing the Wheelco Instrument Company's line of indicators, controllers, recorders and combustion safe-guards.

89. **CONCRETE HARDENER**—Folder describes Lapidolith, patented liquid concrete hardener which penetrates into concrete producing a close-grained, granite-hard top-

ping that stands up under heavy traffic, and protects floors against the deteriorating effects of many industrial oils and chemicals. L. Sonneborn Sons Inc.

90. **MOTOR BRUSHES**—"Fractional Horse-power Equipment Brush User's Guide" is title of 44-page booklet issued by the Stackpole Carbon Co. It contains information on spring calculation, and describes silver graphite types, and contains helpful data for selecting and applying brushes for longer life.

91. **BLOWERS, FANS**—"Lungs for Industry" is the title of bulletin issued by the General Blower Company, giving information on blowers, fans and exhaustors for blowing, heating, cooling, conveying, aerating, separating and agitating.

92. **BOXES**—"Your Product in Wire-bounds" is subject of booklet issued by the Wire-Bounds Manufacturers Assn., covering the packing of industrial products. It is profusely illustrated demonstrating the use of wirebound shipping boxes and crates for industrial products in both domestic and import trade.

93. **PACKAGING**—Folder describes Tri-tect, a lamination of cellophane and fine wax, which is available in printed or plain bags, also in printed or plain rolls for machine packaging. It is said to be suited for inside or outside wrapping, and is recommended for packaging wide variety of products from seeds and tobacco, to frozen foods, hygroscopic products, etc. Dobeckmum Co.

94. **PRESSES**—Bulletin 285, 12 pages, carries 37 photographs of miscellaneous types of hydraulic presses ranging in capacity from 100 to 6000 tons for high speed production and accurate forming of sheet metal parts to any desired shape. Baldwin Locomotive Works.

95. **SEALING, LUBRICATING**—Sealing and lubricating compounds for general purpose and specialized use are described in Catalog #909 published by the Parker Appliance Co. Properties of valve lubricants, thread sealing, line sealing, gasket and anti-seize compounds are described. Compounds for aluminum systems, and systems handling oxygen, alcohol, aromatic and high octane fuels, liquids and gases, are also listed.

96. **SOOT REMOVER**—Chemical Removal of Soot and Slag from Boiler Furnaces is subject of 12 page report on Nalco SR-150, a new chemical soot remover being marketed by National Aluminate Corporation. Material is furnished in powder form which vaporizes completely on contact with the fire bed. Vapors penetrate the soot and bring about ignition.

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5. Physical Properties Required .....
- a. Hardness ..... c. Surface finish .....
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\*Stokes' word for the theory and practice of making finished solid products from granular materials.

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Leach Silo Unloaders, manufactured by the Leach Company of Oshkosh, Wisconsin are a boon to farmers in eliminating an unpleasant chore and conserving ensilage. But packing the 1200 pound, oddly shaped units in such a way that they could be handled and installed conveniently presented a difficult problem. Some method for shipping the machine as a group of sub-assemblies that would pass through small silo doors was essential.

Wirebounds solved the problem. Wirebound engineers "tailored" eleven different boxes and crates to package and protect the various parts of the unloader for safe, convenient shipping and handling. At the receiving end, re-assembly was easier because contents could be seen and identified through the sides of the Wirebounds for unpacking in proper sequence.

Light weight Wirebounds meant real shipping economy for Leach too. Less than seven man-minutes were required for packaging any one of the unloader sub-units and packed crates could be stacked 10 high to conserve valuable floor space!

Wirebounds can provide an efficient, economical solution to your shipping problems. Mail the coupon below!



161 pound motor for the Leach Silo Unloader is mounted on a crate base which is engaged by the bottom cleats of the Wirebound.



The door-like fourth side is folded shut and the wires are twisted closed with an electric toggle twister.

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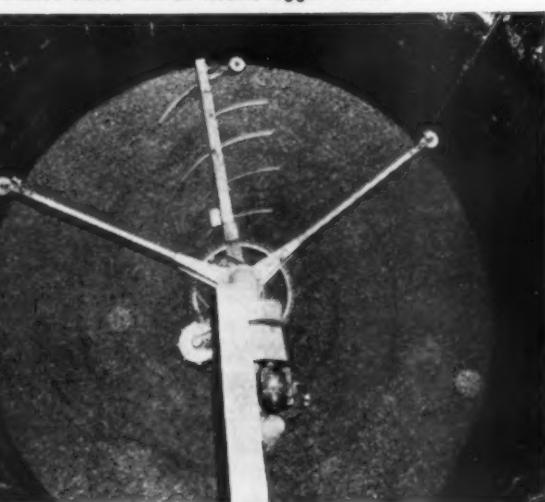
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The unusual shipping problem encountered by the Leach Company is readily apparent in the above view of the assembled Silo Unloader.



Unpacking the 11 Wirebounds at the erection site is no problem since the twisted wire closures need only be cut to open.

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### for Hardfacing, Build-Up and Repairing

The Amsco welding rods and electrodes listed below are designed solely for repairing, rebuilding and hardfacing of ferrous equipment parts. Rolled or drawn electrodes are coated by extrusion, the coating being concentric with the core wire and uniform in thickness from end to end. Cast rods are machine dip coated. For a full list of applications, write for Amsco Bulletin 1047-W.

**NICKEL-MANGANESE STEEL**—Cold drawn, heat treated electrode. For building up manganese steel castings and repairing manganese steel parts . . . spindles, wobblers, coupling boxes, drilling rig sheaves, coal crusher segments, etc. Forms flat bead. Work hardens to 450-500 BHN.

**MO-MANG**—for build up on austenitic manganese steel or carbon steel for high impact resistance . . . in jaw crusher plates, dredge pump shells, dipper lips, hammermill parts, stone crusher mantles and concaves. Extremely tough weld deposit. Work hardens to 450-500 BHN.

**MANG-CO**—composite electrode with carbon steel core and manganese compounds and other alloys in the coatings. Tough and abrasion resistant. Work hardens to 400-500 BHN.

**NUMBER 459**—Cast hardfacing welding rods and electrodes. For severe abrasion resistance (but moderate impact) . . . in pug mill knives, mixer blades, brick dies, scraper and shredder knives, drag chain links, pulverizer hammers, sand pumps. Weld deposits, 500-600 BHN.

**NUMBER 217**—Cast alloy hardfacing welding rods and electrodes. For severe abrasion resistance (but moderate impact) and moderate high temperature resistance . . . in non-cooled rolling mill guides, carbon scrapers, stoker screws, clinker conveyors, 3rd rail shoes. Smooth weld of 600-700 BHN.

**FARMFACE**—cast alloy welding rods and electrodes. For heavy abrasion . . . in plow shares, cultivator spades, corn planter runners, plow discs, corn cob crusher rolls, cylinder teeth. Weld deposits, 500-600 BHN.

**NI-HARD**—cast alloy welding rods and electrodes. For hardfacing against abrasive materials . . . in conveyors, clay extruding dies, crusher rolls, sandslinger cups, clamshells, muller tires. Weld deposits, 500-600 BHN.

**ECONOMY HARDFACE**—rolled, cold drawn alloy welding rods and electrodes. For combined abrasion and impact resistance . . . in dipper teeth, cams, rollers, screws, rough gears, sprocket wheels, bulldozer tips, road plows, friction clutches, log haul chains. Weld deposit, 450-550 BHN. Self hardening. May be forged and air cooled without loss of hardness.

**RESISTWEAR**—low-cost, composite alloy electrodes. For heavy abrasion . . . in quarry conveyors, classifier screens, muller tires, carbon steel sprockets. May be used on any ferrous metal. Weld deposits, 400-500 BHN.

**NUMBER 1 and NUMBER 6**—cast non-ferrous alloy welding rods and electrodes. For corrosion at all temperatures, abrasion at high temperatures.

No. 1—for screws for hot ashes, charging rams, wet ash centrifugal pumps, rolling mill guides, lathe centers, gudgeon pin bearings. Weld deposits, 426-450 BHN at 1000° F., 380-393 BHN at 1200° F.

No. 6—for blanking, shearing, forming and hot trimming dies, flying shears, auto and aircraft exhaust valve seats, locomotive valve gears. Weld deposits, 297-306 BHN at 1000° F., 260-270 BHN at 1200° F.

**DIEWELD**—alloy welding rods and electrodes. For tools and dies . . . punches, shear knives, chisels, reamers. Air hardening as deposited (500-600 BHN). May be softened through proper heat treatment for machining, and rehardened.

**TOOLFACE**—tough, super-hard high speed steel alloy welding rods and electrodes. For composite cutting tools . . . on lathes, shapers, millers . . . shear blades, wire straightening rolls, clutch fingers, keyways. Weld deposits, 575-675 BHN. Can be readily dressed.

**MACHINE-FACE**—low-cost extruded alloy electrodes in coated form only. For surfacing ferrous parts that must be later ground and machined. Weld deposits, 293-331 BHN. After machining, weld may be flame hardened (with S.A.E. 4140 steel quench) to 461-534 BHN.

**RAIL-FACE**—composite coated alloy electrodes. For high impact and abrasion resistance . . . on carbon steel rail ends, frogs and crossings. Gives flat weld deposit of 325-350 BHN without porosity or cracks requiring minimum grinding.

WRITE FOR  
BULLETIN 1047-W



AMERICAN

**Brake Shoe**

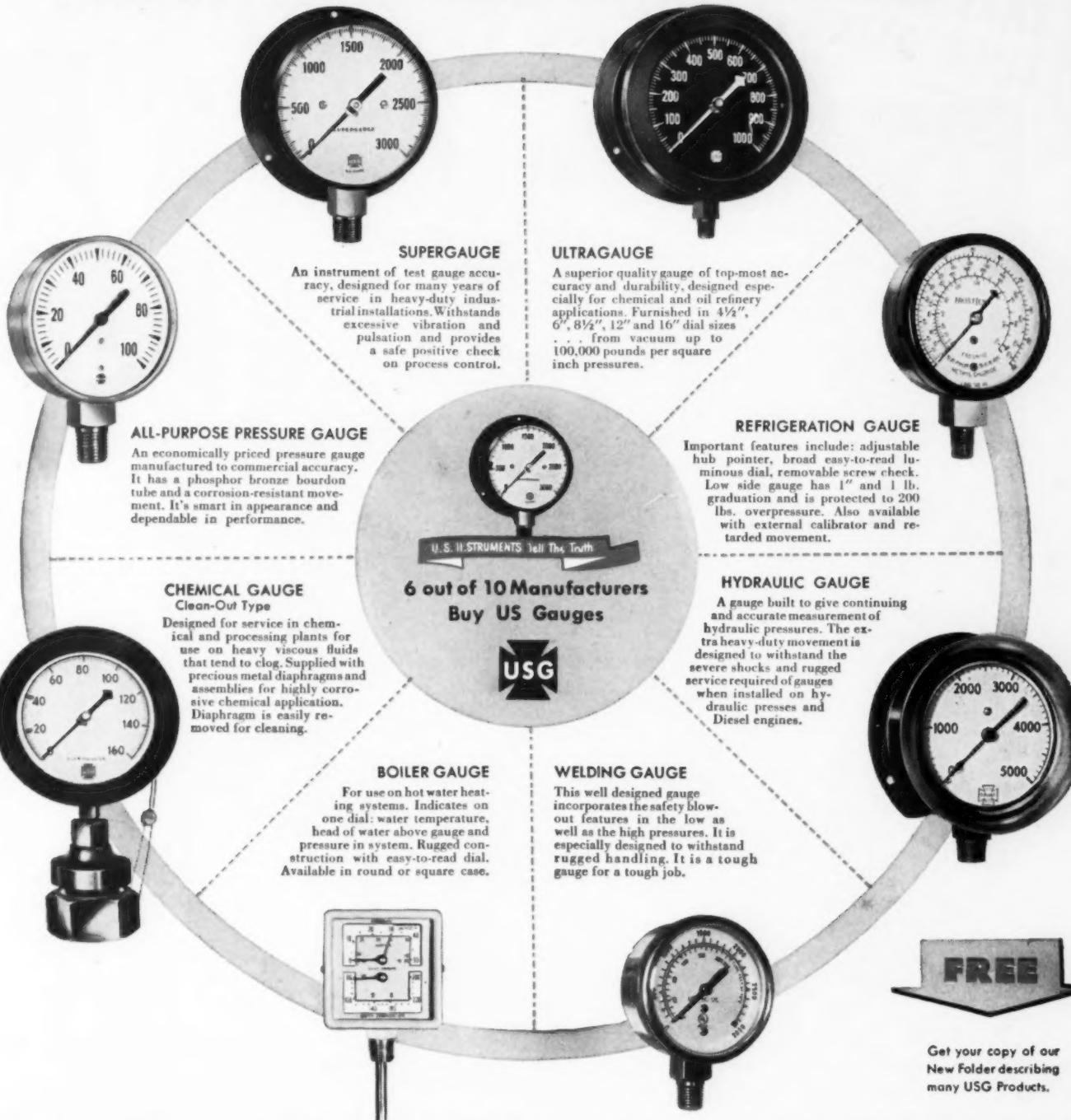
COMPANY

AMERICAN MANGANESE STEEL DIVISION

Foundries at Chicago Heights, Ill., New Castle, Del., Denver, Colo., Oakland, Calif., Los Angeles, Calif., St. Louis, Mo.  
Offices in principal cities. Made and sold in Canada by Canadian Ramaope Iron Works, Inc., Niagara Falls, Ont.

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**THEY MAY  
LOOK ALIKE . . .**

*but there's a difference!*



Both gowns look alike to the camera's eye, but one is an original creation . . . the other a clever copy. By actual comparison a vast difference in quality and value is evident to the expert.

#### **THERE IS A DIFFERENCE IN TAPS, TOO!**

They may look alike at first glance, but the careful workmanship in BATH ground thread taps is easily detected by the experienced craftsman. Vital manufacturing intangibles too — such as quality control and pride in the product — consistently maintain this high Bath standard. Right from the start BATH stock and special taps are planned for uniformity and accuracy — they're ground from the solid AFTER hardening.

In your plant, this means greater speed, more holes per tap, longer runs between sharpenings, improved accuracy and cleaner threads — assuring holes consistently within gaging limits.

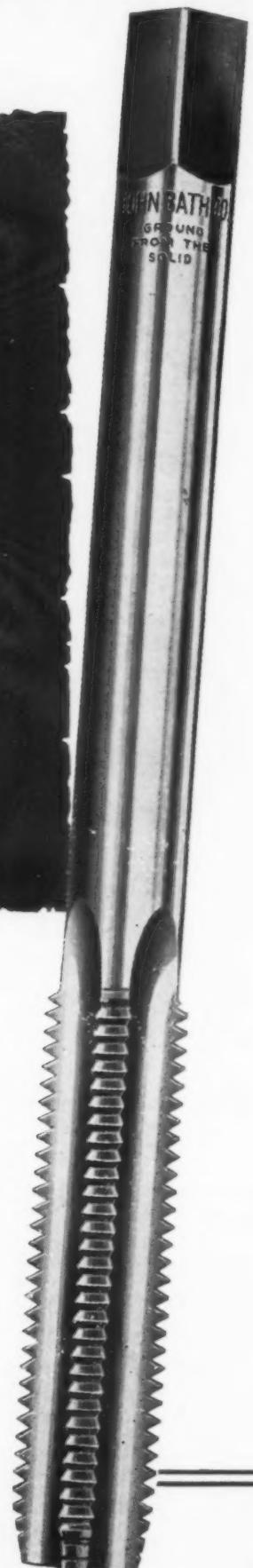
You'll find BATH commercial and precision taps for any regular job and experienced BATH engineers to help you with unusual threading problems. Insist on BATH taps. Profit by their plus-performance!

PLUG AND RING THREAD GAGES

GROUND THREAD TAPS

INTERNAL MICROMETERS

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**LEARN WHY WELDERS  
CALL NI-ROD "THE  
EASIEST HANDLING  
ELECTRODE EVER MADE  
TO WELD CAST IRON"**



In 1945, after several years of development and thousands of tests, The International Nickel Company introduced Ni-Rod\* welding electrodes.

At that time we thought our laboratories had produced a rod that would finally take cast iron welding out of the "hit-or-miss" class.

Today, Ni-Rod has proven even better in the field than it did in the original tests.

*Sales records show that 82% of our customers re-order Ni-Rod once they try it!*

Welders keep telling us that Ni-Rod is the easiest-handling electrode ever made for welding cast iron.

And they're not only using Ni-Rod to weld cast iron. They're also using Ni-Rod to weld cast iron to steel.

\*Trade mark  
of The International Nickel Company

**HERE'S WHAT NI-ROD  
GIVES YOU**  
*in performance*

- Stable arc in all positions
- Smooth bead contour
- Excellent "wash"
- Easy slag removal
- Preheating seldom required
- Works on either a.c. or d.c.

*in weld quality*

- High-strength deposit
- Easy machinability
- Thorough fusion
- Freedom from cracks and porosity
- Close color match

*in usefulness*

- General repair and maintenance of cast iron parts, including the building up of worn surfaces.
- To remedy minor flaws in new castings
- For correction of machining errors
- As a production tool to assemble cast iron to steel



**MAIL  
IT TODAY!**

When you get your three free electrodes try them on any cast iron job in the shop. We feel sure that you, too, will say: "Ni-Rod is the last word for welding cast iron".

Ni-Rod comes in  $\frac{3}{32}$ ",  $\frac{1}{8}$ ",  $\frac{5}{32}$ " and  $\frac{3}{16}$ " diameters. Please check the size you want on the coupon below.

NI ROD

Gentlemen: I'd like to try Ni-Rod welding electrodes. Please send me 3 free rods of the diameter I have checked.

$\frac{3}{32}$ "     $\frac{1}{8}$ "     $\frac{5}{32}$ "     $\frac{3}{16}$ " (Please check one size only)

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Company.....

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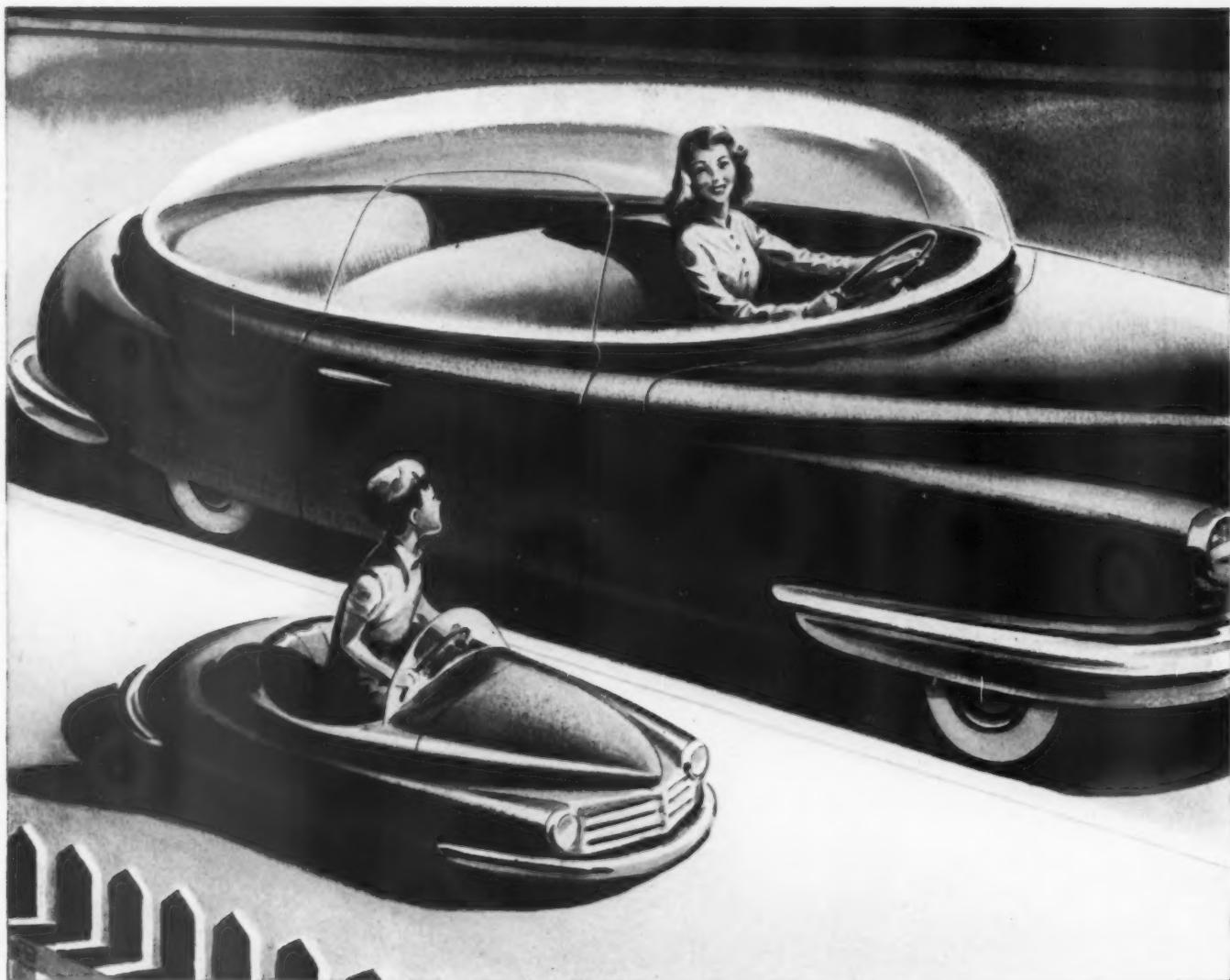
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State.....



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Spongex is used for seals on iron lungs and incubators; for weather strip and rug cushions; for typewriter key pads and refrigerator insulation — an infinite number of things, increasing almost daily.

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## **when you buy fluorescent fixtures**

This tag identifies a fluorescent fixture equipped with a G-E ballast. Look for it. It means that the manufacturer has utilized the advantages of the industry's finest ballast to assure rated lamp life and light output :: quiet and trouble-free operation.

General Electric ballasts are lamp-matched. They are designed, built, and tested to get the most out of standard fluorescent lamps—to give you the kind of lighting you are looking for. *Apparatus Dept., General Electric Company, Schenectady 5, N. Y.*

FLUORESCENT LAMPS, unlike incandescent lamps, do not draw current directly from the lighting circuit. Instead they draw their current through a special transformer or ballast mounted in the fluorescent fixture.

With fluorescent lighting, therefore, the amount of the light you get from the lamp, the life of the lamp and, to some extent the life and efficiency of the fixture itself, depend to a large measure on the characteristics of the ballast. Good ballasts mean better lighting.

**GENERAL ELECTRIC**

412-62



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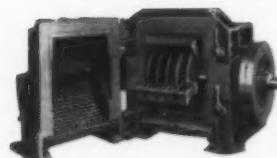
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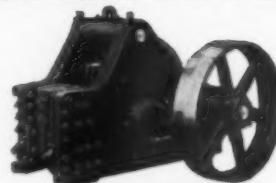
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for coarse and medium reduction (1" to 20 mesh). Open door accessibility. Soft, moderately hard, tough or fibrous substances. Built in several types and many sizes.



**JAW CRUSHERS**

for coarse, intermediate and fine reduction of hard or soft substances. Heavy or light duty. Cam and Roller action. Special crushers for Ferro-alloys. Several types, many sizes.



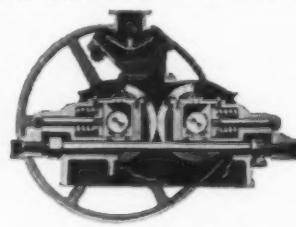
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October 12, 1492.



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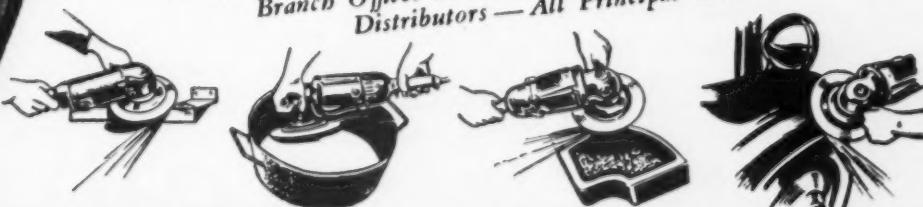
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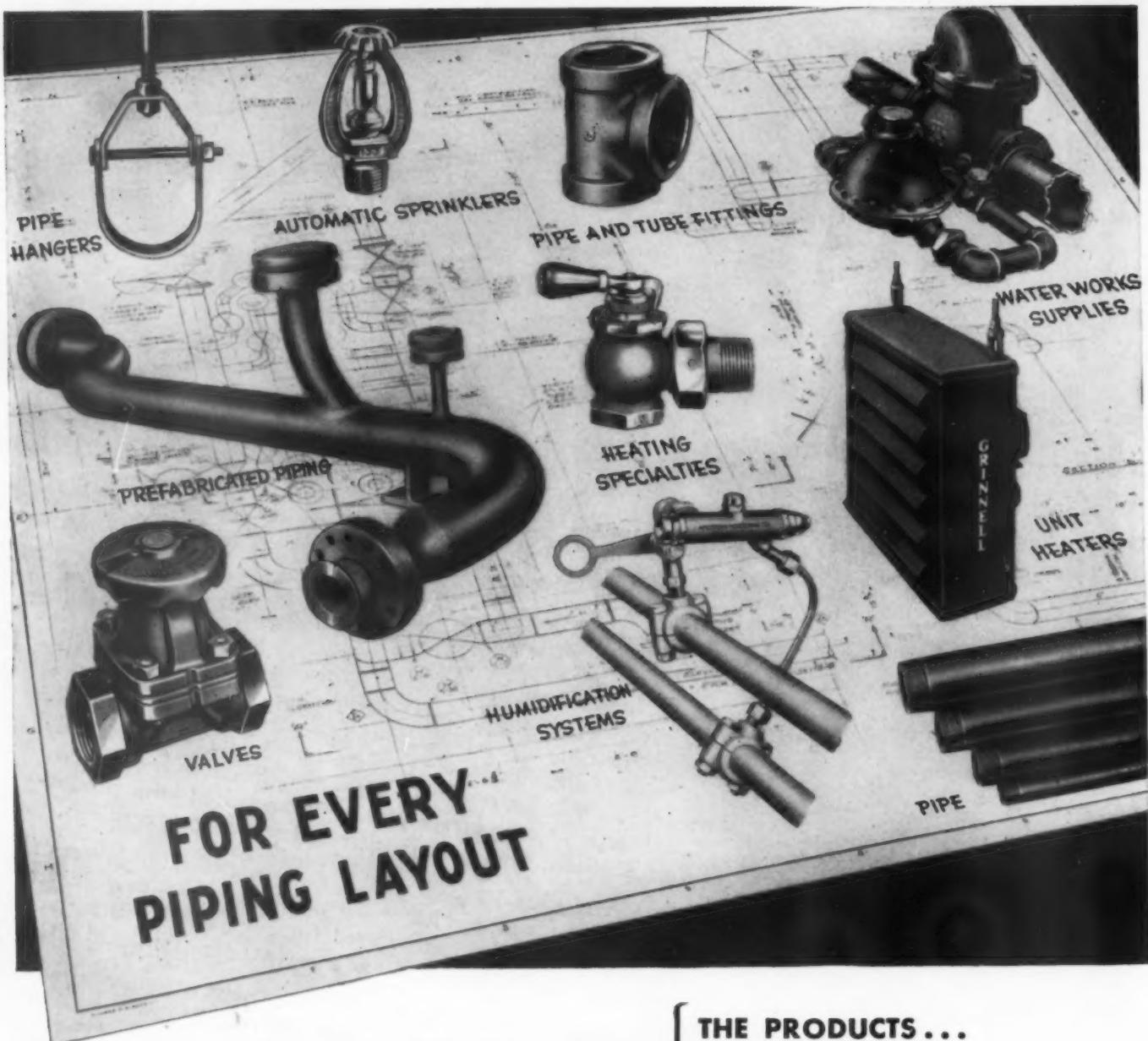
Please have your representative call just as soon as possible to demonstrate Bayflex Raised Hub Disc Wheels. It is understood that this will not obligate us in any way.

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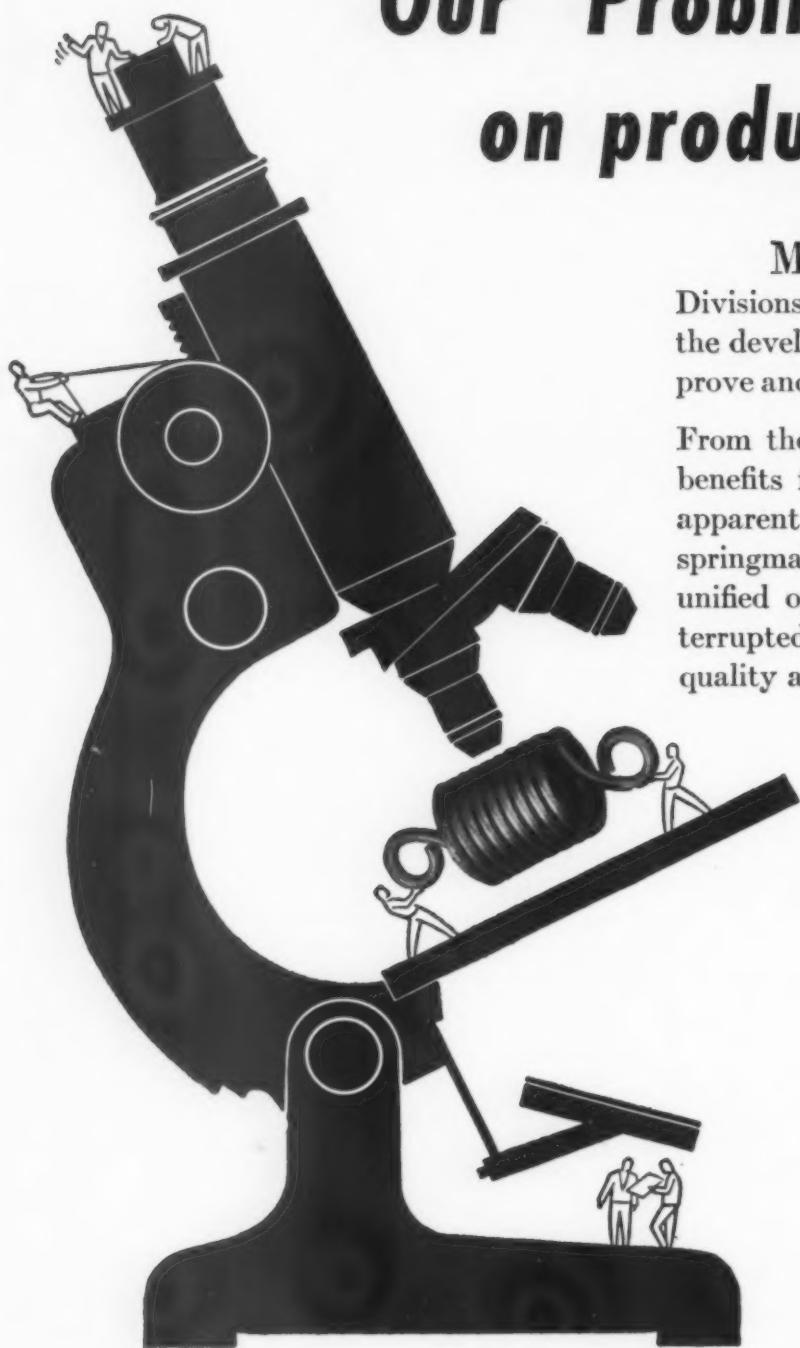
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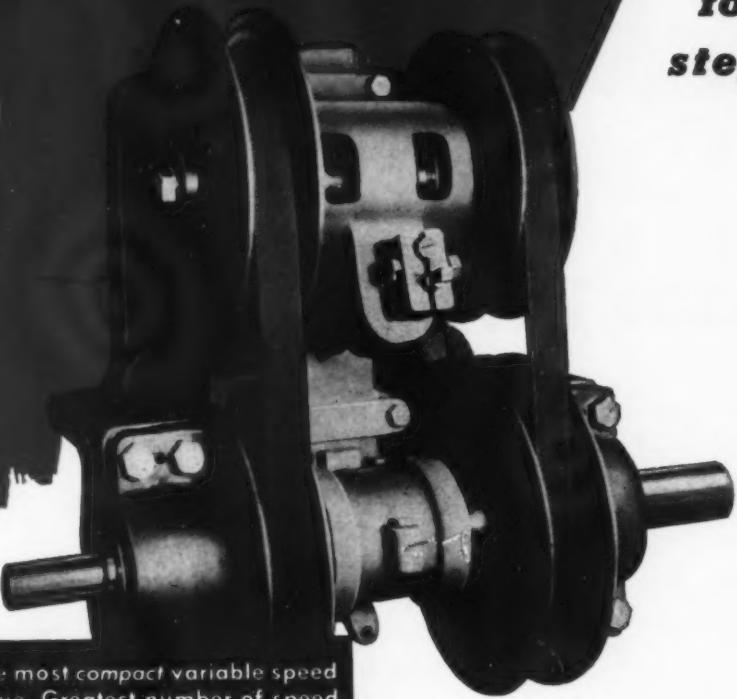
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SOCKET AND SMALL NUT  
TURNING SET**



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Small, light in weight yet strong, the Herbrand Midget Socket Set is engineered for utmost speed and ease of handling. A compact, precision-made set to complete your hand tool assortment.

*Order from your HERBRAND JOBBER or write us for details*

**HERBRAND DIVISION** THE BINGHAM-HERBRAND CORP.  
FREMONT, OHIO

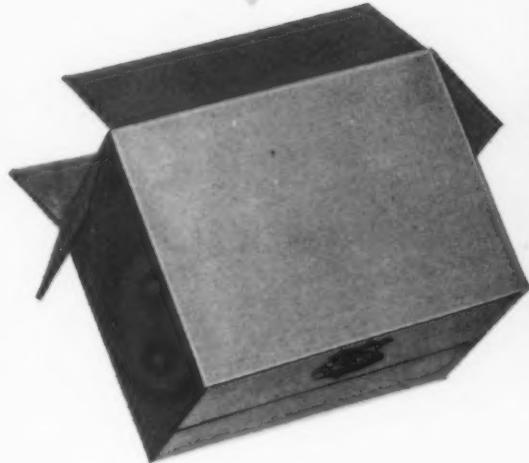
Ten Hot Forged Midget Sockets with openings ranging from  $\frac{1}{16}$ " to  $\frac{7}{16}$ ". Three Midget  $\frac{1}{4}$ " Drive Handles: Spinner, Sliding T, and 4½" Extension. Fitted in metal box. Weight 15 oz. Other Midget Socket Sets are also available.



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**SUPER-QUALITY TOOLS**  
*...the finest money can buy!*

**Experienced buyers  
look at the Pedigree**

*buyers of boxes, too*



**THE COCKER SPANIEL**, American member of a family that traces back to the 14th century, is still a great favorite with sportsmen. Cocks are said to be so named because they were first used in hunting woodcocks. Affectionate and merry, they are perfect family pets.

**FOR ASSURANCE OF *Quality***  
**FOR ASSURANCE OF *Service***  
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MOST corrugated containers look alike. But the difference shows up in performance.

The famous Union shield trade-mark is your assurance that every step in making the box, from

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It symbolizes seventy-five years of leadership in designing, engineering and producing paper packages... plus long experience as one of the nation's larger producers of Kraft container board.

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makes GOLD STRIPE the choice of Purchasing Agents across the nation . . . because Gold Stripe Brushes are designed by master craftsmen—for those who want only the best. Smart P. A.'s long ago discovered the outstanding economy values of Gold Stripe. Now they'll have nothing else, because Gold Stripe brushes keep maintenance costs at a minimum.



## Gold Stripe's BIG PLUS FEATURES

1 Riveted Stainless Steel Ferrules

Keeps Gold Stripe Brushes stronger longer and spreads economy—keeps maintenance cost down.

2 Perfect Balance  
Machined Hard-Wood Handles

Makes a balanced brush—reduces arm and wrist strain—increases painter's efficiency.

3 New Improved Life-Saver Jacket

Keeps your Gold Stripe lively, straight and clean. Saves the life of the brush.

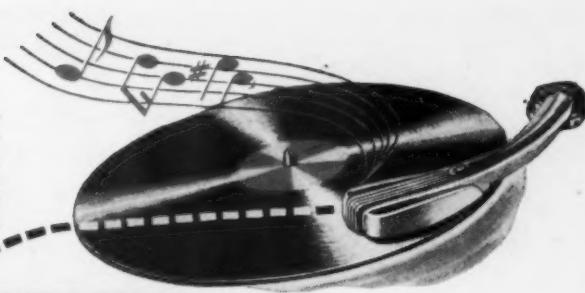
Today's Gold Stripes are better than ever. Their outstanding qualities represent the ultimate in brush-making skill. Gold Stripe brushes are unsurpassed for long life, efficiency and economy. Order today and start to enjoy the "plus values" of Gold Stripe—"the distinctive mark of America's Finest Paint Brush." There are 144 conveniently located Pittsburgh Branches to serve you.



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PITTSBURGH PLATE GLASS COMPANY

The G-E Electronic Reproducer, which magnetically recreates the full recorded sound, derives its magnetic field from a G-E SINTERED ALNICO 5 permanent magnet.



# Announcing... A NEW G-E DEVELOPMENT SINTERED ALNICO 5



Actual size of G-E SINTERED ALNICO 5 permanent magnet used in the G-E Electronic Reproducer is shown in red.

#### NEW ENGINEERING DEVELOPMENT

SINTERED ALNICO 5, General Electric's newest magnetic material, now enables you to design intricate shapes with higher external energy than ever before. The minimum guaranteed available energy is 3,500,000 gauss oersteds for most sizes and shapes. New G-E SINTERED ALNICO 5 possesses tensile properties several times those of CAST ALNICO 5 and can be produced economically in small size parts. You get better surface finish plus closer dimensional tolerances with new G-E SINTERED ALNICO 5.

#### NEW DESIGNS POSSIBLE

New SINTERED ALNICO 5 has higher external energy than either SINTERED ALNICO 2 or 4. This makes possible new designs heretofore impossible or impractical. It is especially adaptable where small powerful magnets having high magnetic properties are required. Because of their great stability and external energy, SINTERED

ALNICO 5 magnets can save valuable space in your product. You can usually improve your product by re-designing to use high energy G-E SINTERED ALNICO 5. Typical applications now in production which use G-E SINTERED ALNICO 5 include the following: meters, relays, fountain pens, electronic reproducers, and compasses.

#### ENGINEERING SERVICE

G-E application and development engineers, working closely together, are ready to advise you on new SINTERED ALNICO 5 and other G-E magnetic materials. Our engineers are backed by years of research and the development of thousands of magnetic applications. They will be glad to work with you on your product design. For more information, please mail the coupon shown below.

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1. Higher external energy than either SINTERED ALNICO 2 or 4.
2. Tensile properties are several times greater than CAST ALNICO.
3. Excellent surface finish.
4. Close dimensional tolerances.
5. Intricate shapes possible.

METALLURGY DIVISION  
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GENERAL ELECTRIC COMPANY  
PITTSFIELD, MASS.

Please send me:

- ( ) Technical Report on new SINTERED ALNICO 5.  
( ) Bulletin, CU-12, "G-E Permanent Magnets."

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**PERMANENT  
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CD48-V2

# No Compromise

WITH  
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## Each Rollway Bearing takes only its specific load . . .

The radial bearing takes radial loads; the thrust bearing takes thrust loads. In this simple but effective way, Rollway's Right Angle Loading eliminates compound loads and complicated stresses. Specifically, it splits your load in two.

**Rollway Right-Angle-Loading helps your machines to run longer . . . under heavier loads . . . with lower maintenance cost**

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Less replacements!**

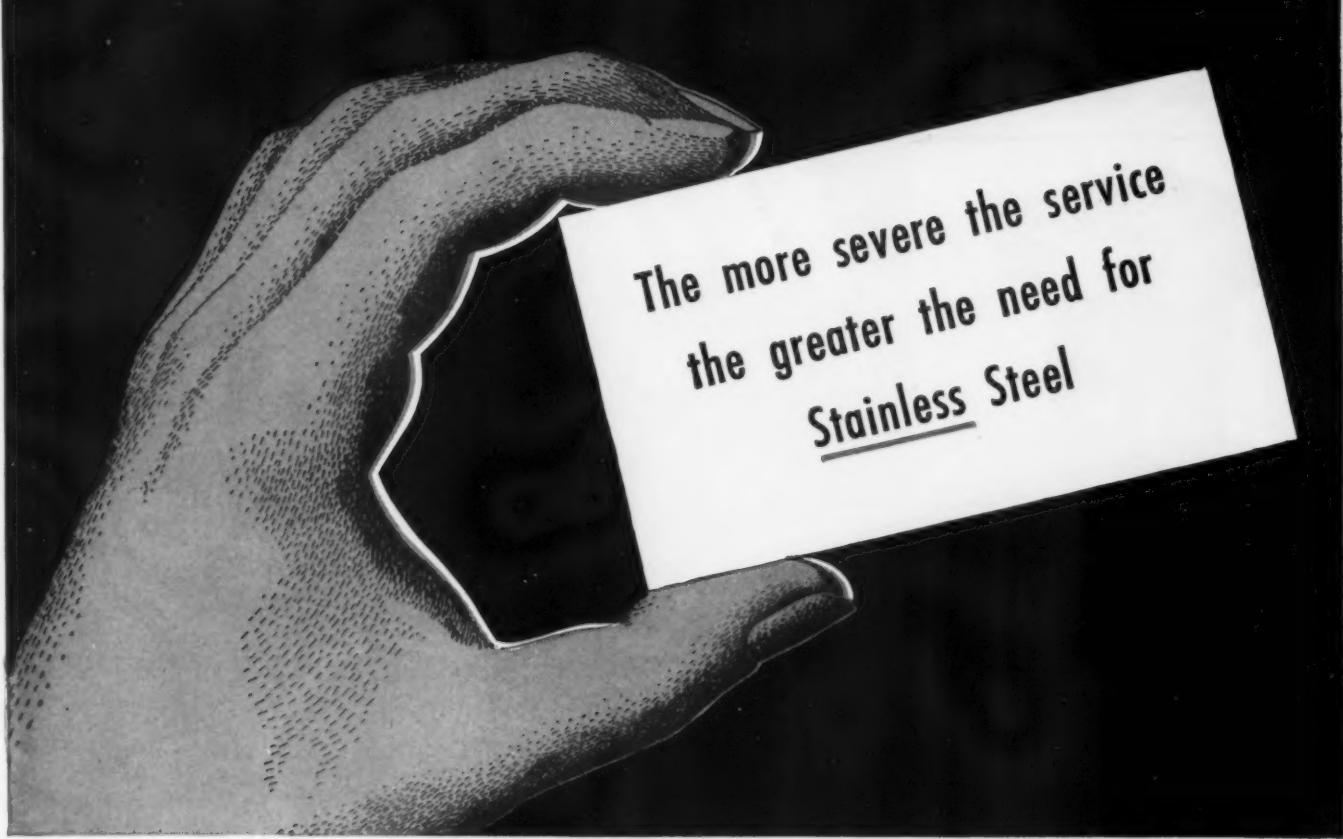
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The more severe the service  
the greater the need for  
Stainless Steel

If you want to reduce corrosion losses...

## PASTE THIS IN YOUR HAT

MANUFACTURERS of high production industrial equipment will find in U·S·S Stainless Steel the answer to many of their toughest corrosion problems. And for three reasons:—(1) No other commercial metal can equal Stainless Steel in its high resistance to so many types of corrosives; (2) Stainless is unsurpassed for retaining high strength under high temperatures; and (3) Stainless Steel is available in such a wide range of analyses and in so many different forms—in plate, sheets, strip, wire, pipe and tubing, etc.—that it will meet almost any fabricating requirement and service condition.

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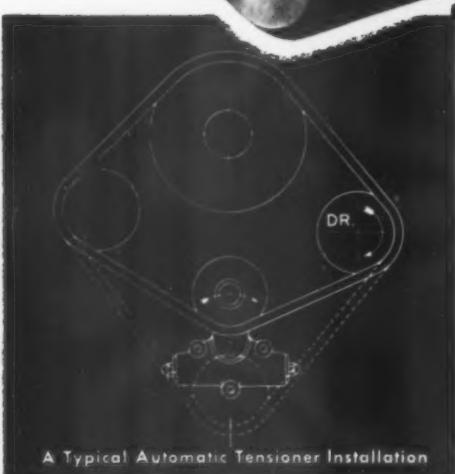
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B-505

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A Typical Automatic Tensioner Installation

**CHECK THESE ADVANTAGES**

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2. Flat base, three bolt installation. Allows position or location to be easily changed if desired.
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5. Sprocket or pulley on crank arm can be designed with ball or roller or needle bearing mounting.

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*Increases Efficiency  
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Heads completely machined top and bottom. Milled slots — less burrs. Flat and chamfered machined point. Carried in stock.



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All studs made steam-tight on tap end unless otherwise specified, with flat and chamfered machined point. Nut end, oval point. Land between threads shiny, bright, mirror finish. Carried in stock.



**\***  
**CONNECTING ROD BOLTS**  
Made of alloy steel — heat treated — threads rolled or cut — finished to extremely close thread and body tolerances — body ground where specified. Expertly made by the pioneers in producing connecting rod bolts by the cold upset process.

### FERRY PATENTED ACORN NUTS

For ornamental purposes. Steel insert — steel covered. Finish: plain, zinc plated, cadmium plated. Size: 9/16", 3/4", 15/16" across the flats.

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Heat Treated Black Satin Finish  
Made of high carbon steel — AISI C-1038. Furnished with black satin finish due to double heat treatment. Hexagon heads die made, not machined. Points machine turned; flat and chamfered. Tensile strength 130,000-160,000 p.s.i. Carried in stock.



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Heads completely machined top and bottom. Milled slots — less burrs. Flat and chamfered machined point. Carried in stock.



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Valve tappet adjusting screws — Hexagon head style — to blue print specifications — hexagon head hard; polished if specified — threads soft to close tolerance — points machine turned; flat and chamfered.



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Case hardened to proper depth and ground to close tolerances. Thread end annealed. Supplied in various head shapes, with oil holes and grooves of different kinds, and flats accurately milled.

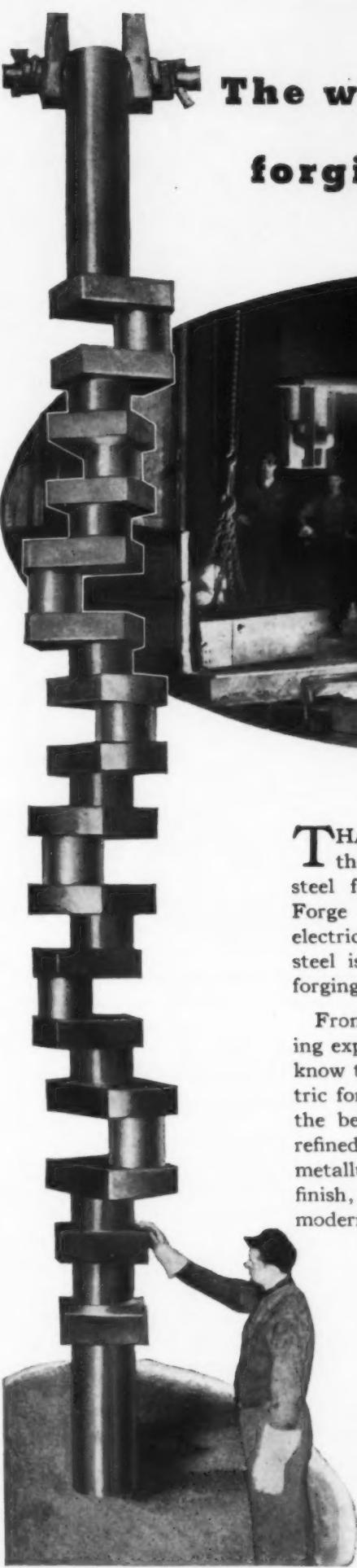


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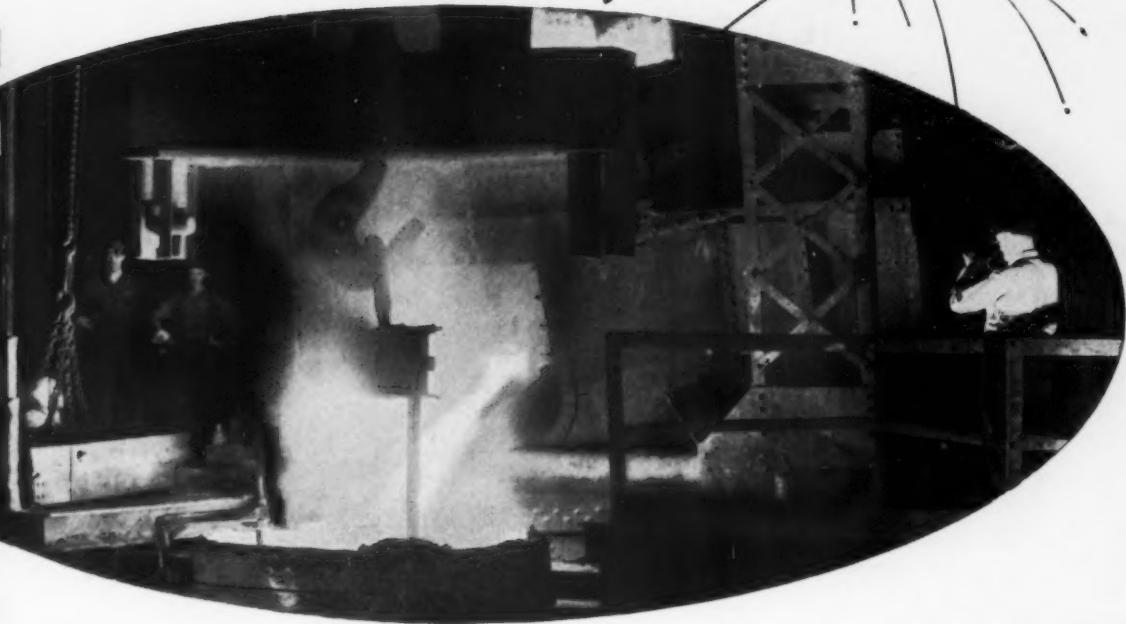
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**STEEL MAKERS • FORGESMITHS  
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# Any V-BELT Changes Shape when it Bends

*Prove this  
yourself!*

## That's Why the **CONCAVE SIDE.**

(U. S. PATENT NO. 1813698)

### Gives You 2 Big SAVINGS!

Bend any V-Belt and *feel* it change shape. The top, under tension, *narrows*. The body, under compression, *widens*. The sides of the belt bulge out.



Fig. 1  
Straight-Sided V-Belt



Fig. 1-A  
Straight-Sided V-Belt  
Bulges in Sheave-Groove.

The result, if the belt is built with *straight* sides, is a shape that does not fit the sheave groove — as shown in Figures 1 and 1-A, above.

Now, bend the V-Belt built with the precisely engineered Concave Side (U. S. Patent No. 1813698) — the Gates Vulco Rope.



Fig. 2  
Gates Vulco Rope  
With Concave Side.



Fig. 2-A  
No Side Bulge. Precise Fit in Sheave Groove.

You get the same shape change but *now* the new shape *exactly fits* the sheave groove as shown in Figures 2 and 2-A.

**Results**—(1) *Uniform* side-wall wear; *longer* life. (2) *Full* side-wall grip on the pulley; carries heavier loads and sudden load increases without slippage—a big increase in drive efficiency—saving belt wear and also saving power!



REG. U. S. PAT. OFF.  
The Mark of **SPECIALIZED** Research

#### The Concave Side is **MORE IMPORTANT NOW** Than Ever Before

Because the *sides* of a V-Belt are what actually *drive* the pulley, it is clear that any increased load on the belt means a heavier load that must be transmitted to the pulley *directly* through the belt's side-walls.

Now that Gates **SPECIALIZED** Research has made available to you **SUPER** Vulco Ropes—carrying fully 40% higher horsepower ratings—the life-prolonging Concave Side naturally delivers greater savings today than ever before.

4812

**GATES VULCO ROPE DRIVES**

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Write for this  
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on the new  
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Wired Strip**

that gives you a  
**S-P-R-E-A-D**  
OF OUTLETS

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2. A complete illustrated catalog-chart of all the parts and fittings required for any job.
3. Instructions on the use of LOPO-TRIM—the metal quarter-round for housing telephone and other low-potential wiring.
4. How PLUG-IN STRIP fits into architectural design.

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**NATIONAL ELECTRIC**  
**PLUG-IN STRIP**

CATALOG NO. CF-2



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E-P gasoline power trucks are available for particularly long hauls where fire-hazard is unlikely and fumes unobjectionable.



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For deliveries from spot to spot, E-P Low Lift Trucks are a profitable advance from hand trucks. These RIDDEN trucks *offer triple savings because they go 3 times faster*. Of course, they also carry larger loads and have a power lift. Skids from your hand trucking system can still be readily used. Where they will serve adequately, low lift trucks represent the smallest investment beyond manual handling.

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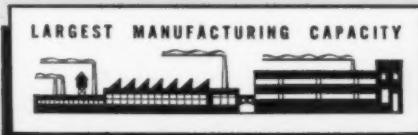
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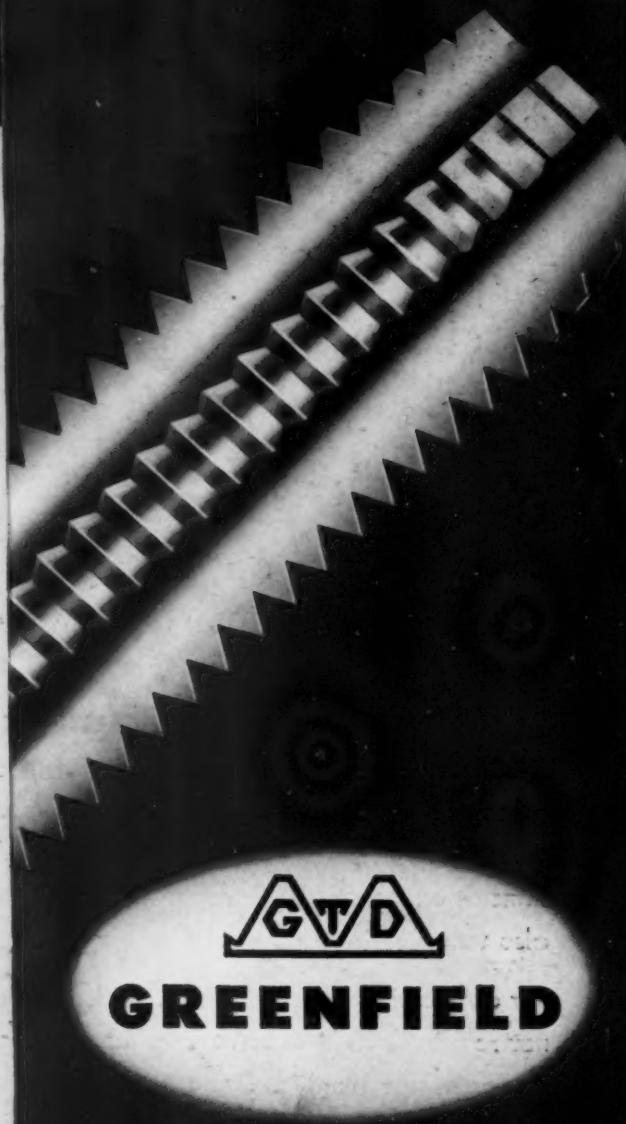


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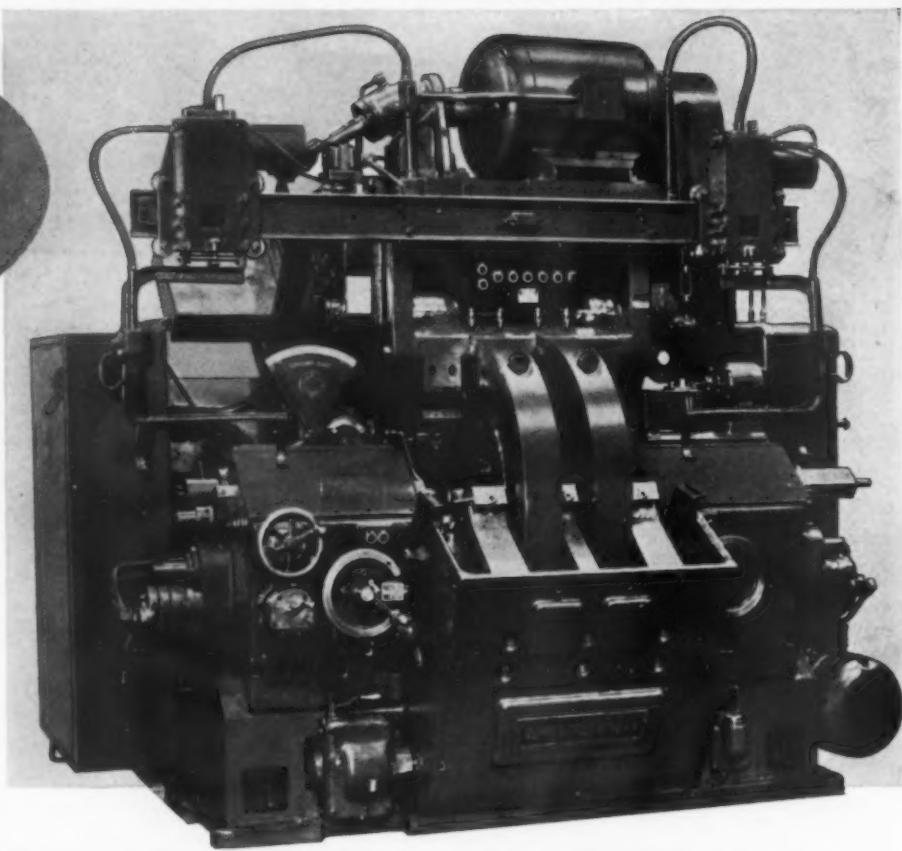
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Motors  
on the job ..**

Wagner type CP totally-enclosed, fan-cooled motors applied to a crank-shaft lathe, used in an automobile manufacturing plant.



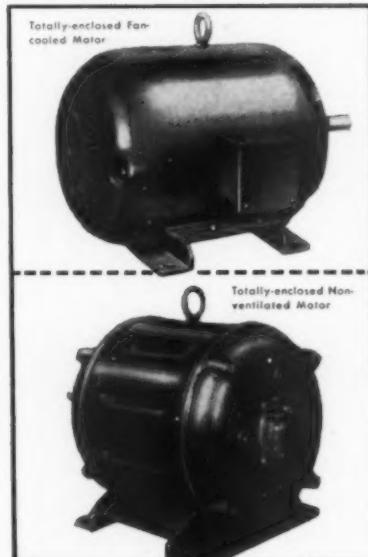
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### Drivers and Bits

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One of the essentials you can't afford to overlook in choosing a cross recessed head screw is that service and repairmen everywhere be familiar with your fastenings, and have the necessary driving tools.

Phillips Hand Screw Drivers and Bits are available throughout the country, stocked by regular hardware outlets, chain stores and industrial supply houses. They are standard equipment today for maintenance workers, mechanics, small shop repairmen, and the household handyman.

Phillips Recessed Head Screws are rapidly becoming the preferred screws for all types of industrial assembly. They can help you speed work, stop spoilage, add strength and smartness. Remember, *only* Phillips Screws give you *all* the advantages of the cross recess design. Specify Phillips.

**Get this helpful new booklet**

that lets you in on the important facts you can't afford to overlook when you choose cross recessed head screws. It's FREE. Use the coupon.



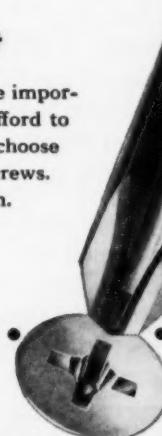
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It is easy to understand the popularity of this new AO Respirator because *each of its advantages leads to another!* Chemical treatment of the filter provides far greater filter efficiency, hence a far smaller filter (only five inches approximately) is possible. Therefore, a smaller filter container can be used which results in greatly superior wearer comfort and improved front and side vision.

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\*Approved by the Bureau of Mines.



\*\*Actual Laboratory Tests

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**Forged Wrench Sets  
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dynamic NEW DESIGN**



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The complete New Britain Line for Automotive, Aircraft, General and Maintenance needs is sold by leading jobbers.

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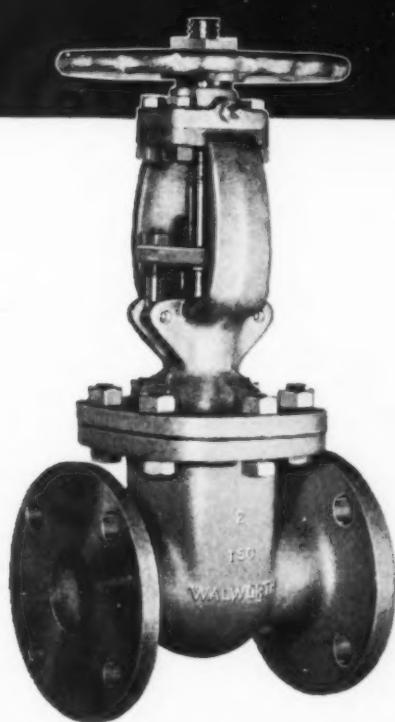
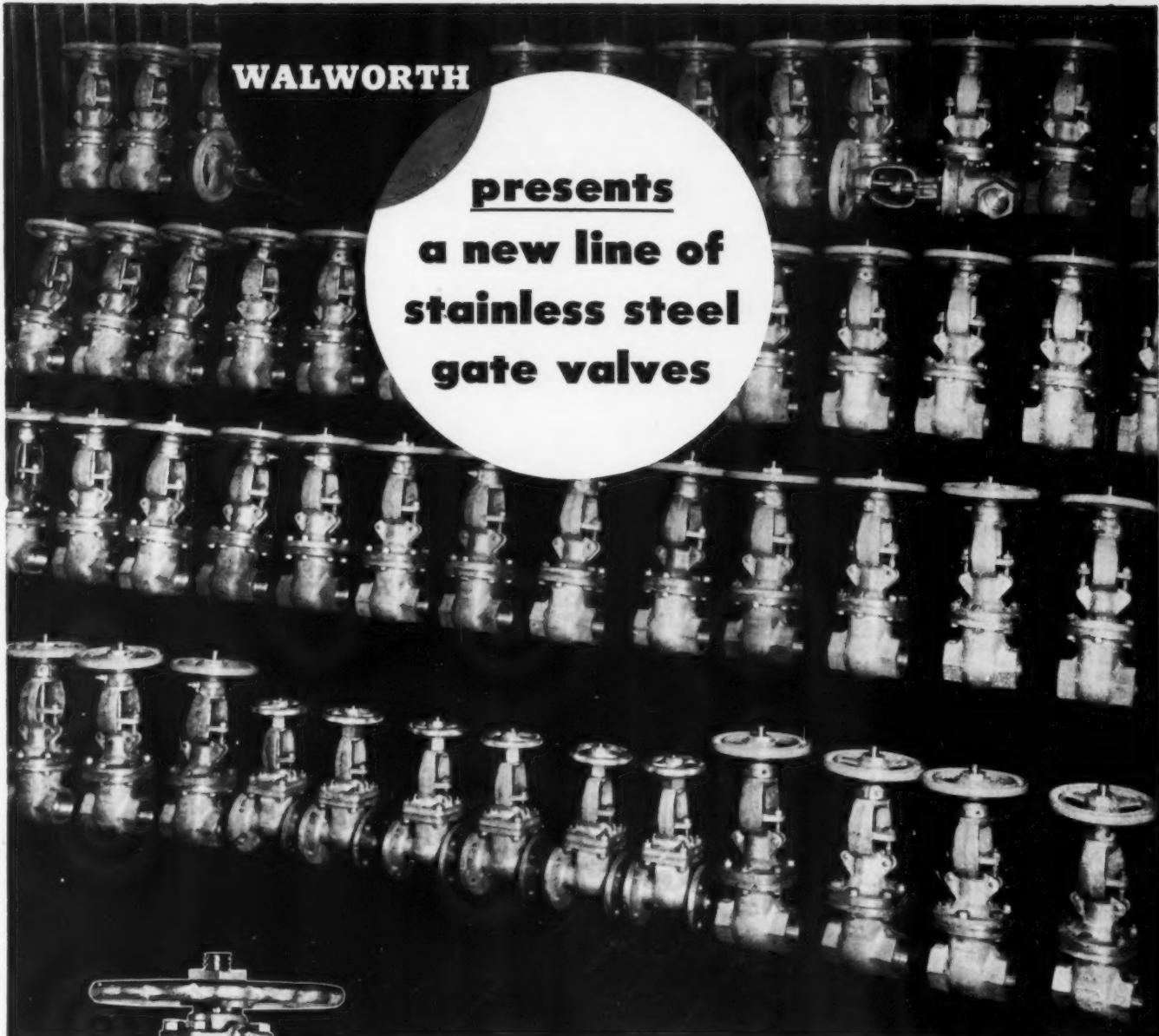
Essex "Extra Test" Magnet Wire is made under the watchful eyes of men who know their business. Their years of experience is reflected in the high quality of the final product. Yet... nothing is left to chance. Around-the-clock laboratory and factory "extra tests" insure foolproof quality control.

Don't overlook this man if you have a knotty problem involving magnet wire. He's the Essex representative from any of the strategically located points shown above. As a specialist in applying the correct solution to winding problems from Essex' complete line, he has helped smooth wrinkles from many brows. Or, if it is something special, he'll work with you and Essex engineers and production men in coming up with the right answer. Contact him through the nearest Essex office, or Fort Wayne. A complete listing is given below.



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Walworth's *new* line of Stainless Steel Gate Valves is an excellent modern example of Walworth valve leadership. These valves combine the latest features of advanced valve design, with the traditional manufacturing skill which has made Walworth valves famous throughout the world.

See your Walworth distributor for further information on Walworth Stainless Steel Gate Valves, or Walworth's complete line of valves and fittings in other ferrous and non-ferrous metals.

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Manufacturers of Hack Saw Blades and Frames, Metal Cutting Band Saw Blades and the Clemson Model E-17 Lawn Machine.

# F.O.B. *philosophy of buying*

THE science of prediction took a terrific beating on November 2nd, with the pollsters emerging from the campaign as the most serious casualties of the voting. Even the defeated candidates could find solace in rationalizing the results by the simple fact that somebody had to lose. Not so with the experts. Credit them, however, with the realism to admit that explanations after the fact are futile; they have a hard winter's work ahead to find out what is wrong with their systems and to revise their basic science to a point where it will again merit public acceptance. The few whose predictions came true—including President Truman, who consistently predicted that the predictors would be confounded—are not much help, for they decline to divulge their professional secrets. Perhaps they too are studying.

results are presented with the advice to the reader to compare his own experience and opinion with that of others in the same field. Black markets, cash discounts, overtime charges, and the like, are not determined by majority votes.

AN interesting sidelight comes from the American Society for Quality Control, whose tellers applied their own scientific methods in the recent election of national officers in that organization, with notably accurate results, which were duly charted in accordance with the best approved QC fashion. "The paid-up membership as of June 17 was tabulated for each section and the percentage of actual ballots cast was determined section by section and also for all sections combined, including Members at Large. The p value for the society was 35.5%. Using this as a standard, 3 sigma control limits were computed for each section." When the results were plotted, "Only one point was outside control limits . . . the chart indicates that the election return was well controlled." To one who has never completely mastered the mysteries of p and sigma, there's a slightly ominous note in that last statement.

PURCHASING agents should take this experience to heart, for, perhaps more than any other group in industry, they are exposed to predictions as to what the future will hold. We repeat that purchasing judgment is a responsibility that cannot be delegated. Get all the expert advice and opinion that you can, then make up your own mind. That's what the voters did.

MAYBE the obvious answer is that the public opinion experts didn't ask the right people. One of the hardest things in the world is to determine who constitutes "the public". Evaluating that question properly is the basis of successful government, or enterprise, or marketing. In our own monthly survey of purchasing opinion, we are careful to restrict our inquiries to a representative group of purchasing men, and we don't expect them to be experts beyond the field of topics directly bearing on purchasing questions. We have yet to get a unanimous return on any question, and the

COMING down to a more practical phase of material research and evaluation, another competent Quality Control man—Leonard Seder of the Gillette Safety Razor Company—has listed three fallacies of thinking that get in the way of straightforward factual conclusions: "Guinea pig" reasoning, which assumes that because a thing is true under one set of circumstances it will be true under all conditions; "Rabbit's foot" reasoning, which attributes a result to false causes; and "Squeaky wheel" reasoning, the philosophy of negativism, which assumes that if no complaints are heard, a material is O.K.

DIRECT research technique is reported in a recent issue of *Toys & Novelties*, as applied in the "laboratory" of the Thomas Mfg. Corp., Newark, toy manufacturers. The photographic illustration shows a children's party held at the plant. While the youngsters were enjoying themselves with specimens of the company's products, the researchers took careful notes on such significant data as the colors preferred by the children, the length of time each child played with each toy, and other valuable items of information. The procedure is of particular interest here because two of the cooperating subjects were Bruce and Jane Frutchey, attractive offspring of the firm's purchasing agent, Harold E. Frutchey.

• • •

THE hobby editor of the Amarillo (Texas) *News-Globe* takes as a recent subject Purchasing Agent J. C. Stockton of the Amarillo Gas Company, who grows peaches. Mr. Stockton is pictured holding a specimen that weighs 17 ounces and measures 12½ inches around, slightly bigger than a regulation baseball, which is also displayed for comparison. Just about the same time, the Syracuse (N. Y.) *Post-Standard* published a photo of County Purchasing Agent R. W. Sollinger, proudly showing a 2¼-pound potato grown at the county farm, where a 12-acre patch produced nearly 4,000 bushels. Mr. Sollinger's claim to fame—he purchased the fertilizer.

• • •

ADD to the purchasing vocabulary: "Phantom orders"—issued by the Munitions Board, to become effective on some future M-Day, if and when we have to mobilize for another war. By acquainting manufacturers with what the government needs, and working out production problems in advance, the plan is expected to cut down industrial mobilization time by from 5 to 12 months.

• • •

ON the agenda of the recent annual meeting of ASA was a discussion of the question: "Is Standardization an Engineering, Purchasing, or Production Function?" The answer, as you may have suspected, is that it is a "cooperative function of all". Consistent with this determination, the meeting proceeded to elect as its new president our old friend Tom Jolly, Vice President in charge of both Purchasing and Engineering for the Aluminum Company of America.



So what if the little guy is only on the lightweight squad—he's just as TOUGH, pound for pound, as the big bruiser. For TRIPLEX makes its entire line of fasteners TOUGH!

You can depend on small sizes as confidently as on the big ones, for they also have maximum holding power and accurate, free-running threads. Do you have our complete catalog? If not, write today to—**TRIPLEX SCREW COMPANY, 5331 Grant Avenue, Cleveland 5, Ohio.**

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## **MOBILIFT** a top hand at cutting handling costs

Most executives agree that material handling costs are too high. That is why so many industries have a pleasant surprise when they are introduced to the "Mighty Midget." They find that Mobilift's tremendous savings lower the point at which they can "break even" on production.

Mobilift is gasoline-powered for full-time, heavy duty service. Its compact design and short turning radius enables it to work in crowded areas. The fact that it has no gears to shift speeds operation—insures more trips per hour, more tonnage per day and less cost per job.

Plant executives who have felt they were not prospects for a lift truck report big savings once a Mobilift operation is installed. Regardless of how you now handle materials it will pay you to check up on Mobilift. Sign the coupon below and get the whole story on the thrifty "Mighty Midget."



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PURCHASING

# Purchasing Previews



A Washington Report . . . . .  
for Purchasing Agents

December 1, 1948

## INDUSTRIAL PRICE LEVELS TO REMAIN HIGH . . . .

Two basic factors which will serve to prop up the present price level of material and industrial components are (1) the sustained demand that will be created through expanded military requirements, and (2) the decision of the labor unions to come in for a fourth round of wage increases.

It has become apparent that union leadership will follow the course of seeking to ride with any upward price trend—rather than attempting to stem the trend by the temporary sacrifice of foregoing further wage increases as a bargaining point for lower prices.

The economic factors behind material price levels are the large requirements, which call for the output of marginal high-cost producers.

During the period of price control, these high-cost producers were brought into the production picture by a series of subsidy payments paid by the Government to insure profitable operation by the marginal producers. Under the normal market conditions, the overall price level must be sufficiently high to insure profitable operation to these marginal producers.

With raw material prices kept up by sustained demand from the three main claimants—high domestic requirements, ECA, and military—there is little likelihood of a price adjustment, especially with labor coming in for a fourth wage round.

## FOOD PRICES MOVING INTO LOWER RANGE . . . .

Only new factor which has been introduced in this cycle is that for the first time in the postwar period, one important segment of living costs will show a decrease: food prices are moving into a lower range.

These lower prices will become more apparent in the spring of next year, when lower feed prices will be translated into lower meat prices.

## QUICKER TURNOVER OF PLANT SCRAP SOUGHT . . . .

Department of Commerce has been making a determined effort to spark industry into a quicker return of iron and steel scrap to the mills and foundries.

Problem of scrap shortages has been highlighted by the cold weather period when there is historically a lull in collections of country scrap. The Department of Agriculture has attempted to get farmers to make extra efforts this winter to keep farm scrap flowing back to the mills, but this will only partially offset the slump in collection.

Only major and reliable sources of scrap are the industrial plants, and it is believed that if plants speed up their shipments of scrap to the mills, the quicker turnover will offset the slowness of winter shipments of country scrap.

#### DEFENSE PRIORITIES ASSURED . . . .

Significant action in the materials supply picture is the decision by steel industry spokesmen to reject any additional voluntary programs for the allocation of iron and steel.

Primary reasoning behind this decision is that the law which authorizes the voluntary allocations policy—Public Law 395—expires March 1, 1949, and there is no indication of what action Congress is likely to take.

In addition to the approaching expiration of the present law, there is the further factor that the voluntary programs which have already been approved, added to the so-called defense demands, in effect commit all available steel. Any additional allocation programs would have to be at the expense of other steel-consuming industry—and this the steel producers are seeking to avoid.

#### FAIR TRADE LAWS DUE FOR OVERHAUL . . . .

Hearings now being held by the Senate Trade Policies Committee on the application of present laws with respect to freight absorption and uniform delivered prices, are aimed at preparation of new legislation to clarify the Fair Trade Laws.

Spokesmen for the Senate Committee state that the present laws are so vague that Federal Trade Commission members differ sharply in their individual interpretations of the laws.

An example of the ambiguity of interpretation is the following excerpt from the FTC statement of policy:

"It is conceivable that any geographic pricing practice may be a part of a conspiracy to eliminate competition. The question whether or not geographic pricing practices are used for these purposes is one of fact in particular cases. It does not differ in character from the question whether any other device—e.g., price filing, the dissemination of price statistics or the holding of periodic meetings of sales managers—is used for a similar purpose.

"Nevertheless, there are differences in the degree of probability that various types of geographic pricing practices will be used for collusive purposes. Some of them, for example f.c.b. mill pricing without freight equalization among sellers geographically scattered, are incapable of being used to bring about identical delivered prices among competitors and for this reason are not suspect of being devices for collusive fixing of delivered prices. Moreover, although f.o.b. mill pricing could be used to allocate trade territories, it would result in changes in the allocation of territories with each change in freight rates or transportation methods and would be a highly inconvenient device in any instance in which important markets lay near the boundary between territories. For this reason there is nothing inherently suggestive of collusion in f.o.b. mill pricing.

"The types of pricing practices which can be readily used for collusive purposes are those which can readily produce identical delivered prices—e.g., basing point systems of freight equalization, and uniform delivered prices in zones or throughout the nation.

"Nevertheless, though the use of a similar geographic pricing practice is consistent with collusive price fixing, it is not conclusive proof of collusion. The simple types of pricing practice, such as establishment of delivered prices which do not differ at different delivery points, may be adopted and observed by several different sellers who, in spite of this element of uniformity in their price structure, follow divergent price policies and do not in fact agree upon prices nor match delivered prices to their customers. Under the foregoing circumstances, the mere uniformity of the geographic pricing formula alone does not provide a basis for a prosecution under the Federal Trade Commission Act."

# How carton assembly costs were cut 50%

**Acme Silverstitch helps fixture manufacturer make stronger carton in half the time**

They wanted a stronger carton assembled at less cost.

So Duro Test Corporation called the Stitching Division of Acme Steel Company.

Working with members of their shipping department, the Acme expert helped install a production-line packaging system built around an Acme Silverstitcher.

Now the Duro Test Corporation, North Bergen, New Jersey, packs its fluorescent fixtures in a stronger box in half the time, and saves 50% of previous labor cost. The finished package is a neater, better-looking job—for greater customer satisfaction.

Why not ask an Acme Shipping Specialist to look over your shipping and packaging problems? You won't be obligated, and savings are often substantial. Mail the coupon today for detailed information on what the Acme Silverstitcher can do for you.

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**ACME & MORRISON  
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ACME SILVERSTITCHER makes a neater, stronger carton at a saving of 50% in labor cost over the previous container assembly method.

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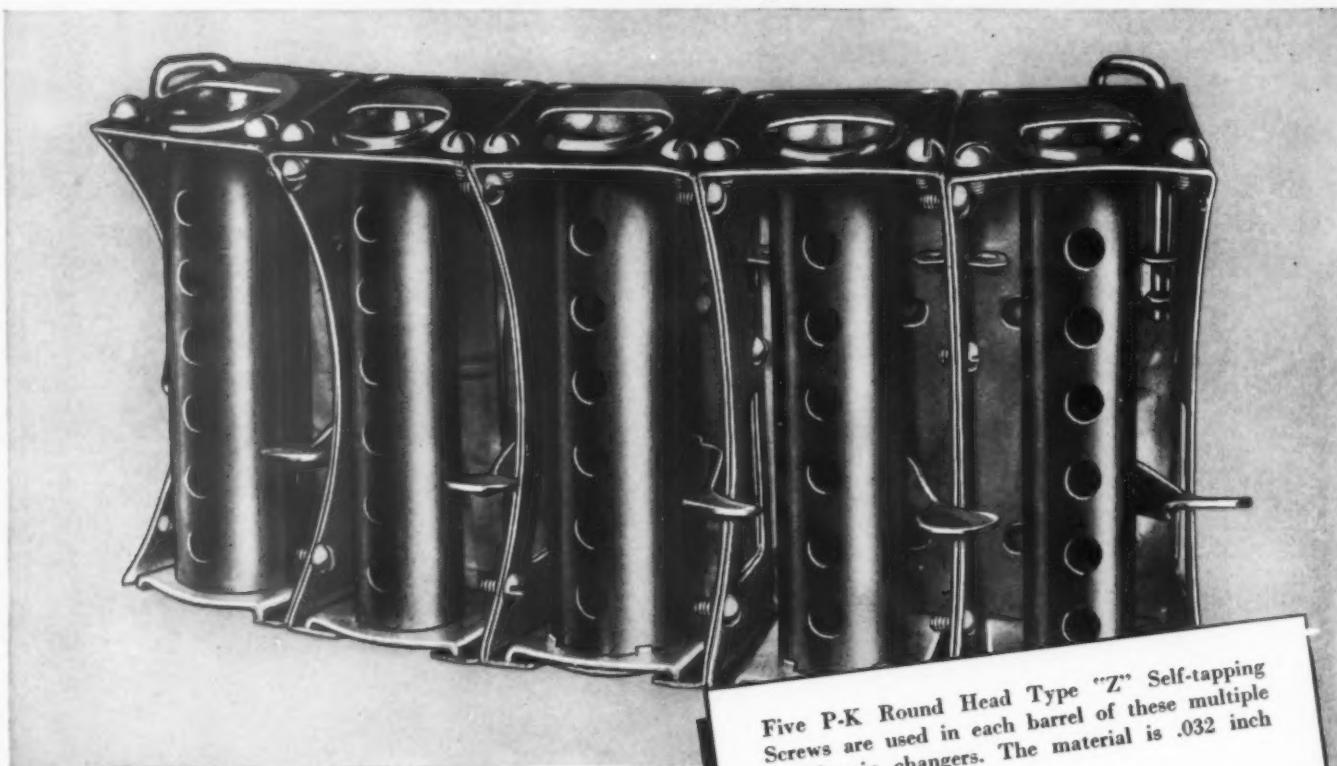
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COMMON SENSE ASSEMBLY ENGINEERING

MAKES THE "RIGHT CHANGE"  
...SAVES 40% IN WORK-HOURS



## ... avoids tapping 22 holes



Five P-K Round Head Type "Z" Self-tapping Screws are used in each barrel of these multiple barrel coin changers. The material is .032 inch sheet steel.

With today's high wages, a 40% saving in assembly work-hours is a change well worth making. And that's why Meyer & Wenthe, Inc. switched to P-K Self-tapping Screws in the assembly of their barrel coin changer.

Screws were necessary, because at times the coin changers must be taken apart and reassembled to relocate various coin units. And since P-K Screws eliminated the extra operation of tapping 5 holes in each barrel unit, they were the logical choice. Assembly was started several steps closer to the finished job and tap expense, tap breakage, and misalignment troubles were avoided. That's common sense in any industry.

If you are being "short-changed" on the as-

sembly line by work-slaving operations, such as tapping, riveting, nut running, or inserts in plastic . . . investigate the simpler P-K method. On seven out of ten jobs, P-K Self-tapping Screws make possible savings up to 50%. At the same time, P-K Screws often make possible improvements in product design.

The odds are with you . . . call a P-K Assembly Engineer and see if you are one of the "lucky seven". If you prefer, mail assembly details for recommendations. Parker-Kalon Corp., 200 Varick St., New York 14, N. Y.

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*The Original*

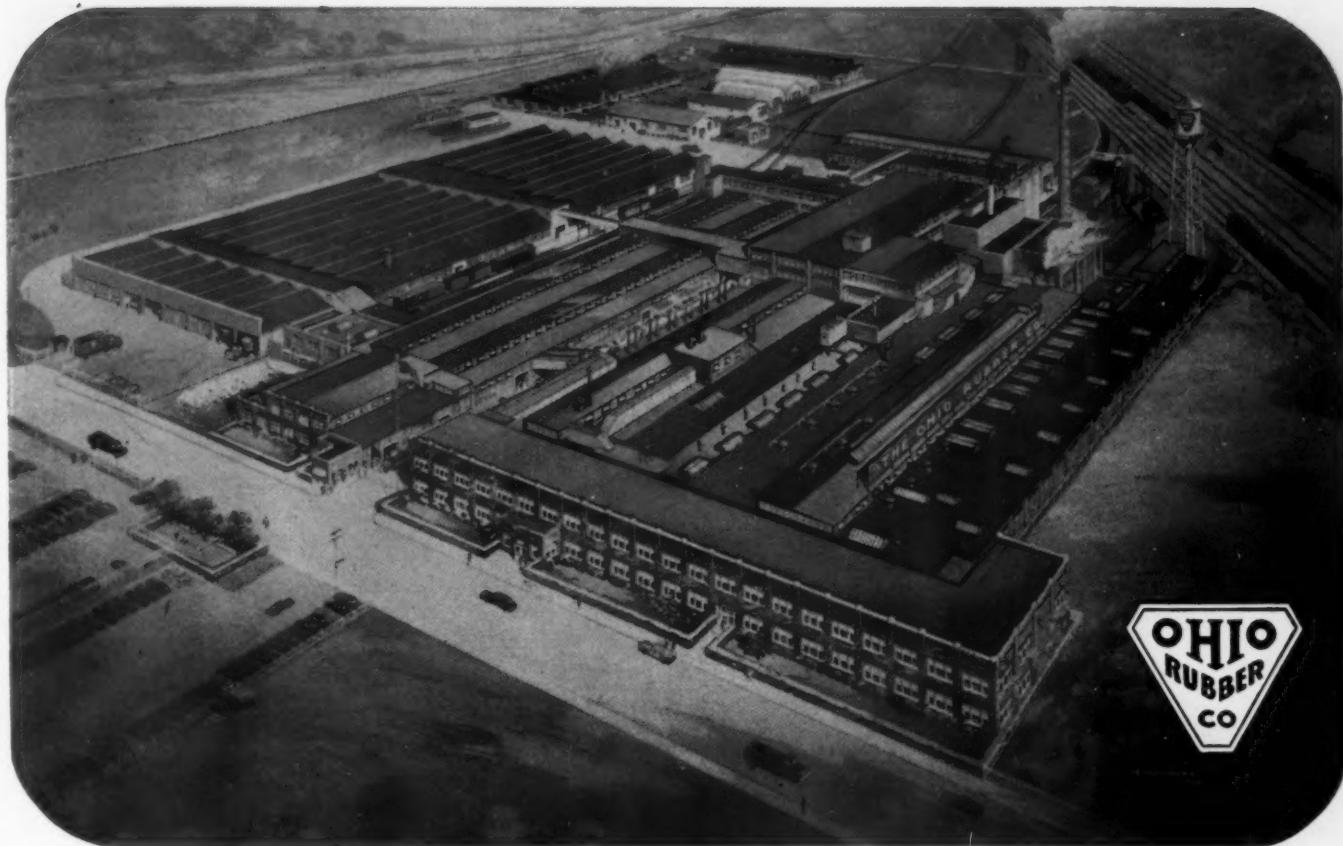
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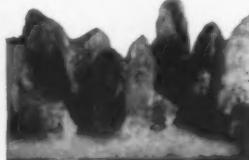
The Backstand-Belt Method of Production Grinding, Polishing and Finishing offers

## NOT 1 BUT 5 ADVANTAGES!

The coated abrasive belt used in conjunction with contact wheel and backstand idler has been established as an efficient production tool. For grinding, polishing and finishing hundreds of consumer and industrial items, the backstand-belt method is more efficient and economical than the older set-up wheel method—because the backstand-belt has these five advantages over the set-up wheel . . .



a



b

1. An abrasive belt is a scientifically made tool, manufactured under controlled atmospheric conditions by experts utilizing modern making equipment. The photo-micrographs compare the crude, uncontrollable rolled-on cutting surface of (A) a typical set-up wheel with (B) the coating on an Armour Abrasive Belt. Note how the sharp cutting points on the factory coated belt are exposed to provide faster, cleaner cutting action . . . increased production.
2. The coated abrasive belt cuts cooler because of the longer interval between work contacts.
3. Inexperienced help can be quickly trained to operate a backstand-belt machine. Highly skilled personnel needed to dress the wheels can be used elsewhere.
4. It takes only a few seconds to change an abrasive belt.
5. Temperature-controlled room for curing set-up wheels can be released for other more productive uses.

Actually, there are more than five advantages to the backstand-belt method. If you are now using set-up wheels for your grinding, polishing and finishing operations, it will pay you to investigate this modern method. The coupon below is for your convenience in requesting the additional information contained in our new booklet—"Facts about Backstand-Belt Grinding and Polishing."

### MAIL THIS COUPON TODAY

Please send me the booklet.

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### Typical example—polishing and deburring time on stamped out surfaces improved 40%.

The McCaskey Register Company of Alliance, Ohio, a leading manufacturer of bookkeeping equipment, formerly used set-up wheels for polishing and deburring stamped out register covers. By switching to the backstand-belt method, production time for this operation was cut from one hour and 15 minutes per unit to 45 minutes per unit.

### CASE HISTORY

This is a splendid example of what the backstand-belt method can do for you regardless of whether you are grinding, polishing or finishing flat or contoured surfaces, cast stamped or forged pieces.

PART. Cash register cases with fitted top cover.

MATERIAL. 18 gauge steel on cases, 20 gauge steel on covers. Both are deep draw stampings. They are given 3 draws and 2 anneals before polishing. The anneal is scale free as a result of being treated in a special atmospheric furnace.

PROBLEM. Polish flat surfaces after stamping and annealing. Deburr fins resulting from stamped out portions of cases and covers.

PREVIOUS METHOD. Set-up wheels—grits 36, 60 and 100. Production with this method was 1 hour and 15 minutes for one case and cover.

SOLUTION. A Porter-Cable backstand unit is used in conjunction with a 16" medium hard, segmented felt contact wheel. The abrasive belts used are a No. 50 Armourclad Heavy Duty Alundum Cloth 2" wide x 168" long and No. 100 Armourclad Alundum Cloth 2" wide x 168" long running at the rate of 7000 SFPM.

RESULTS. It now takes only 45 minutes to polish and debur one case and cover. Intermediate sanding operation eliminated. Storage problem greatly decreased.

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Fulfill Critical Requirements in a Long List  
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For those critical applications where a dense, non-porous structure is an essential characteristic, Eaton Permanent Mold Gray Iron Castings offer worthwhile advantages. High tensile strength, freedom from leakage under pressure, freedom from distortion, and ability to take a high, mirror-like finish recommend Eaton Permanent Mold Castings, particularly for refrigeration and hydraulic applications. Free machinability makes for maximum production speed with a high percentage of perfect parts.

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Under the grind  
of daily service  
Marsh Gauges  
stand out  
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# Another Thermoid First!

## New Wire Braiding Equipment Produces Larger, Stronger Hose for High Pressures

The world's largest wire braiding machine specifically designed for the manufacture of hose is now in production at Thermoid's modern Nephi, Utah, plant. The possession of this equipment enables Thermoid to make wire braid hose in larger sizes and with greater strength than had previously been possible.

Hoses of 2, 3 or 4 braids can be made on this machine in sizes up to 2½" I.D. That means Thermoid can make hose that will rival pipe in strength but still have the flexibility of rubber. The specifications of Thermoid's hose for carrying high pressure are superior to any current production on the market.

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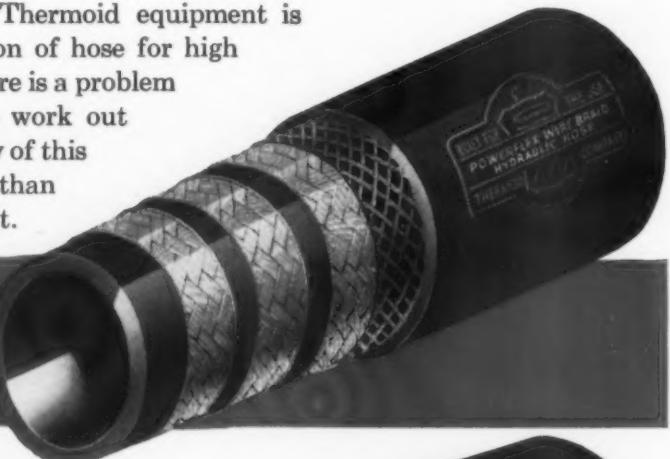
### Powerflex Wire Braid Hydraulic Hose

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Fig. 3031—Class 300-pound Cast Steel O.S. & Y. Globe Valve.



Fig. 559 — 125-pound Iron Body Bronze Mounted Swing Check Valve with regrindable, renewable seat and disc. →



Fig. 375 — 200 - pound Bronze Gate Valve with renewable "Powellium" nickel-bronze disc.

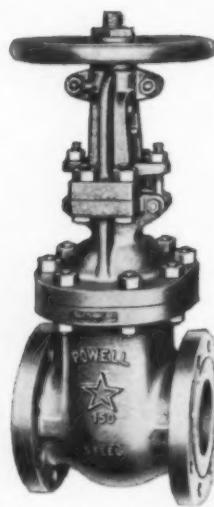


Fig. 1503—Class 150-pound Cast Steel O.S. & Y. Gate Valve.



Fig. 1793—Large 125-pound Iron Body Bronze Mounted O.S. & Y. Gate Valve.



Fig. 150—150-pound Bronze Globe Valve with renewable composition disc.

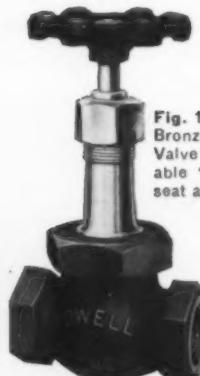


Fig. 190—150-pound Iron Body Bronze Mounted "Ireneum" Globe Valve with regrindable, renewable "Powellium" nickel-bronze seat and disc.

Fig. 241—Large 125-pound Iron Body Bronze Mounted O.S. & Y. Globe Valve.

Fig. 1708—200-pound Bronze Globe Valve with renewable stainless steel seat and regrindable, renewable "Powellium" nickel-bronze disc. →



Fig. 560—200-pound Bronze Regrinding Horizontal Swing Check Valve.



Fig. 8150—Bronze L.P.G. Globe Valve with special composition disc. Write for descriptive circular 8-48B.

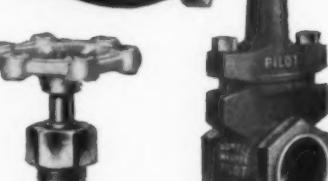


Fig. 1460—125-pound "Master Pilot" Gate Valve with Iron Body, Bronze Mounted, or in All Iron.

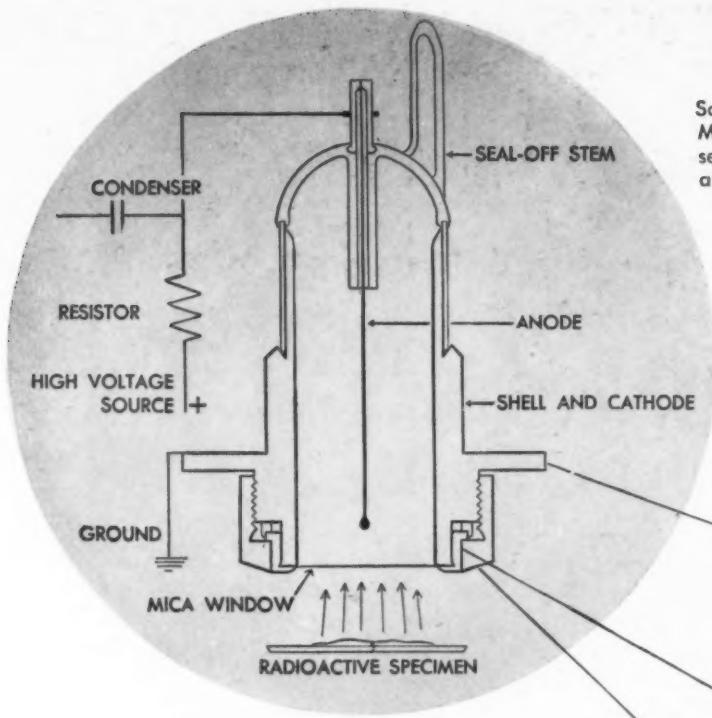
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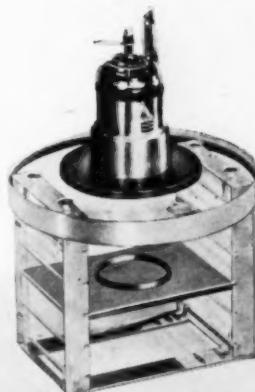
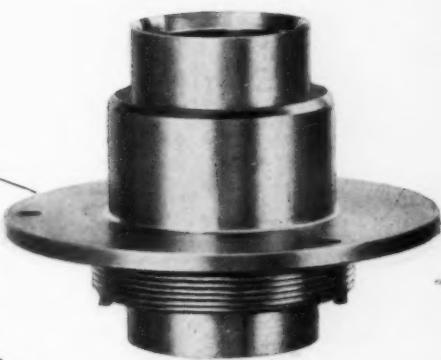
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Schematic diagram of Geiger-Müller Counter—a relay so sensitive it can be tripped by a single electron.



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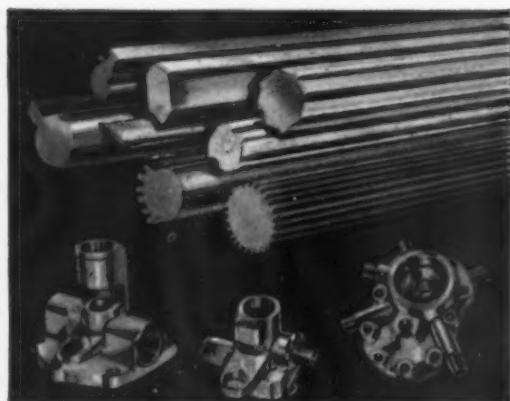
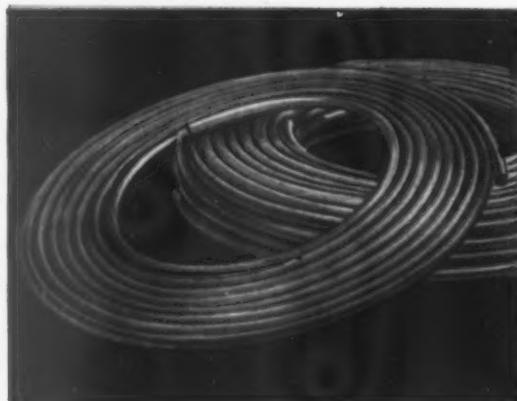
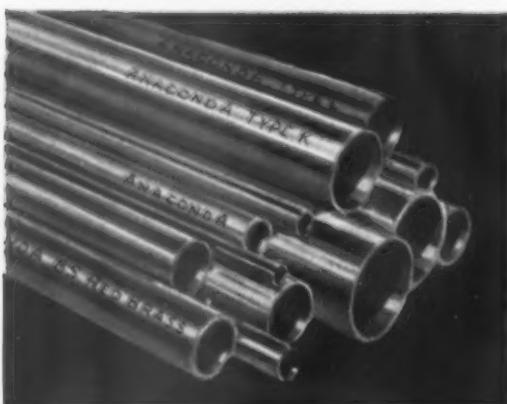
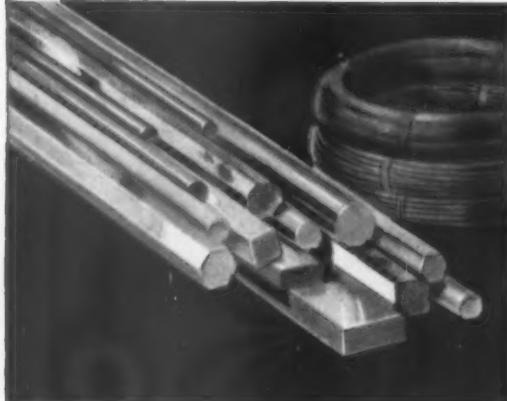
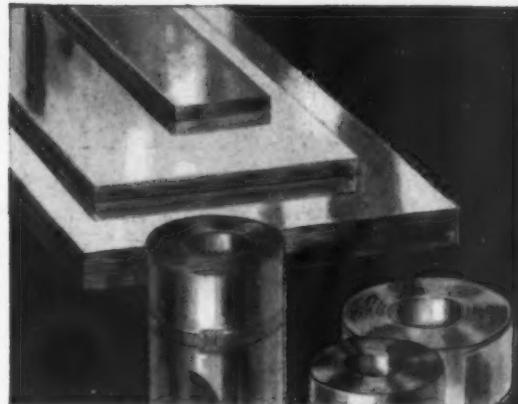
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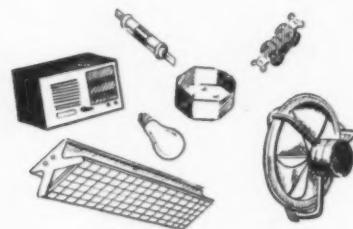
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# PURCHASING

The National Magazine of Industrial Procurement

## DECEMBER, 1948

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## CONTENTS

	Pages
Test Period for Inflation .....	85
How We Use What We Buy .....	By J. S. Rutherford 89
Mechanics of Materials Control .....	By Joseph Albin 90
How Many Linear Feet in a Roll? .....	By W. F. Schaphorst 96
PURCHASING Reports on Purchasing Opinion	
Will Industrial Controls Return in 1949? .....	97
What Management Expects of the Purchasing Department .....	By O. G. Mayer, Jr. 99
New England Purchasing Conference .....	102
What Is the Heat Pump? .....	By Donald Frederick 108
Getting the Most from Salvage Materials ..	By E. L. Cady 110
Southeastern Purchasing Agents Convene at New Orleans .....	112
The Meat of the Meeting .....	113
The Buyer's Assistant .....	By F. J. Schweiss 117
Facts about Electroforming .....	By Benjamin Melnitsky 118
Where We Stand	
Commodity and Business Trends .....	123
Purchasing Patterns .....	By G. L. Hartman 127
Foreign Trade and the Individual .....	By Grey Leslie 129
Governmental Buyers Report Progress and Plan for the Future .....	131
Commodity Standards in the Supply Operation .....	By W. S. MacLeod 140
When Deceit Becomes Fraud .....	By Leo T. Parker 143
MONTHLY FEATURES	
Ask "Purch". New Trade Literature .....	14
F. O. B. .....	64
Purchasing Previews .....	67
Highlights of This Issue .....	87
New Products—Ideas .....	148
Office Equipment and Supplies .....	221
Among the Associations .....	238
Personalities in the News .....	264
Letters to the Editor .....	308
Buyer's & Seller's Mart .....	310
Index to Advertisers .....	312



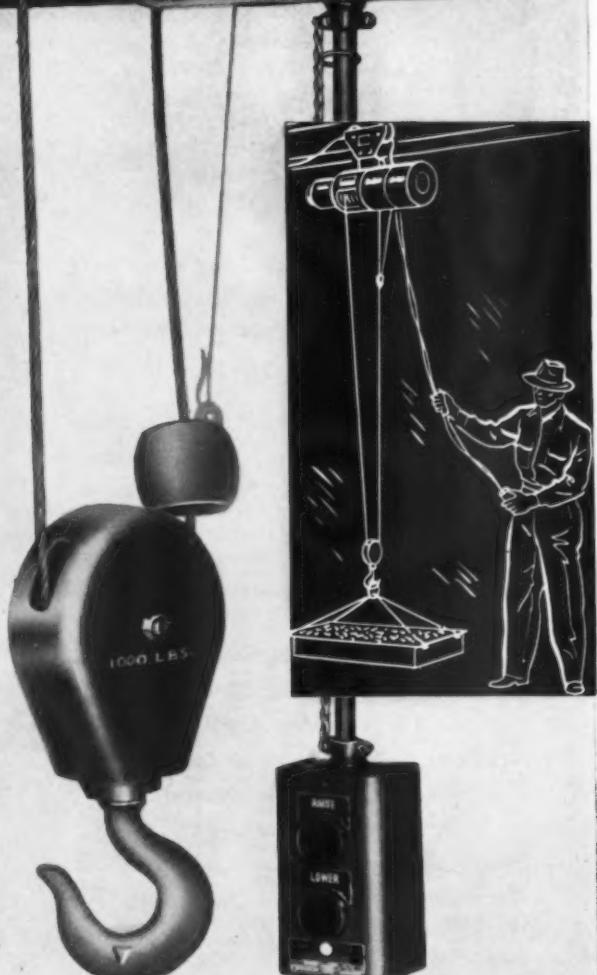
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# Test Period For Inflation

ACCORDING to the statistical barometers, the inflationary cycle has run its course. With the exception of a few commodities, chiefly in the metals group, and a few major products such as automobiles, supply and demand have come into reasonable balance. The psychological factors, as reflected in consumer buying habits and industrial caution, indicate general acceptance of this fact. Significant free markets, such as existing housing and used cars, show the same trend.

Yet the fear of inflation, from political rather than economic causes, has been kept alive. The possibility of war, and the defense expenditures to prevent it—the possibility of another round of wage increases—the continuing demand for materials in connection with the programs of stockpiling and aid to European nations—the request for stand-by price control powers—the uncertainty as to fiscal policies that may be enacted by the new Congress—all add up to the possibility of a trend contrary to the logical economic development.

Until these questions are resolved, prudent management and purchasing policy dictates continued caution and a readiness to move in either direction. Barring the eventuality of war, these questions should be answered during the first quarter of 1949. By that time, the level of defense, aid, and stockpiling expenditures should be well established, the temper and the broad program of the national administration should be made clear.

The insistence on price controls to put a lid on inflation is probably the least important point to watch. In the battle against inflation, the administration has shown little imagination, and at times it has seemed like tilting against windmills. The real story will be told in terms of subsidies and credits, tax policies, wages and benefits, governmental extravagance or economy. With a unified Congress and Executive, the new administration has an opportunity to steer the course which will lead to sound readjustment or to a permanent high-cost economy that will wipe out reserves and the industrial resources upon which our present system is founded.

*Stuart F. Henry*

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# HIGHLIGHTS

A brief summary of outstanding features of timely interest and importance in this issue, to conserve the time of busy readers



**Purchasing Conferences** in several of the NAPA Districts this fall showed the trend of purchasing thought in these uncertain and challenging times and provided a medium for lively and constructive exchange of experiences and opinions on meeting the problems of the day. It is through such meetings that the professional standards of industrial procurement are raised to new high levels of competence and usefulness. Two of these conferences are reported in detail in this issue—the meeting of District 7 at New Orleans (see page 113) and the meeting of the New England Associations at Hartford (page 102). Highlights of the principal addresses and discussions at these gatherings provide varied and stimulating fare for the buyer in any section of the country who wants to keep abreast of current thought and trends in the field of industrial buying.

In a more specialized sector of the purchasing field, the annual meeting of the National Institute of **Governmental Purchasing** (reported on page 131) probed the problems of the buyer for local and state administrations, showing a healthy interest in liberalizing the regulations characteristic of public buying so as to bring the methods more nearly in line with commercial practice, to the benefit of the taxpayer.

**Commodity Standards** were the subject of particular attention at the latter meeting. All buyers have an interest in this topic. An expert on standardization tells how to go about it, and shows how a coordinated policy will promote more efficient purchasing, storeskeeping, issue, and materials accounting, resulting in substantial economies. Turn to page 140.

A successful production executive tells (on page 99) **What Management Expects** of its purchasing department. Oscar Mayer has been in close touch with purchasing activities in his own company, and his remarks have a practical basis in that experience. Beyond the functional responsibility of the buying operation itself, he finds in purchasing a strong factor contributing to successful company operation, strengthening management policies, and building good will for the organization in contacts with supplier companies and in community relations. And along with these opportunities he sees a definite responsibility on the part of the purchasing agent to equip himself for handling his department as a position of full executive stature. Every purchasing man should read this frank and constructive appraisal of the job.

This month's **Guest Editorial** (page 89) emphasizes the point that sound purchasing involves not only a knowledge of the materials themselves, but an understanding of their application and plant use, for greatest utility and ultimate value. The well qualified writer is J. S. Rutherford of Buffalo, currently serving as Vice President of NAPA for District 8.

The techniques of **Materials Control**, as practised in the complex maintenance and stores operations of a far-flung airline organization, are detailed in the story on page 90. This article is a continuation of an earlier (October) article in which the comprehensive Materials Department was described, coordinating the related functions of purchasing, stores, inventory control, and surplus disposal. The results of this system have been highly successful, providing a model that can be studied to excellent advantage, since the fundamental policies and methods are applicable to a wide range of industrial situations where material control is a problem.



**Electroforming**, based on the familiar plating process, is a comparatively new fabricating method for intricate metal parts, attracting attention because of its ability to form contours unobtainable through conventional shop and machining processes, with a high degree of precision and exact reproduction of surface textures. The method is described on page 118, with some interesting photographs of typical parts produced.

**Salvage** operations have been scientifically developed to the point of profitable by-product sales, says E. L. Cady in his report on a well known chemical company where the problem of waste has been turned over to the purchasing department. Some interesting methods of getting maximum value from used containers are also described. For this story of how to turn liabilities into assets, turn to the article on page 110.



Are you making full use of these monthly departmental features compiled especially to keep you informed on recent industrial developments? A selected list of new **Trade Bulletins and Catalogs** that are yours for the asking (page 14) and the illustrated summary of **New Products and Ideas** (page 148) will help you keep abreast of industrial progress. The **Forms Forum** (page 235) shows successful procedures from other purchasing offices. **Previews** of national policies affecting purchasing are compiled by our Washington editor (page 67). **Economic Indicators** are summarized on page 123, and the popular survey of **Purchasing Opinion** appears on page 97.



Howard Allen, Inspector



Howard Allen, Lab. Man



Howard Allen on Order Desk



Howard Allen, Sales Representative



Howard Allen, Machine Operator

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# RYERSON STEEL

# How We Use What We Buy

Knowledge of materials and industrial processes is essential to good buying

By J. S. Rutherford

A COMPLETE and detailed knowledge of the manufacturing process used in his own plant is a requisite for the industrial buyer. Since this knowledge is essential, he must realize that it will be gained not only through books but also by actual experience in some phase of plant operating work. Lacking this experience, the Purchasing Agent should be that aggressive, inquisitive type of person who recognizes the necessity of spending considerable time in gaining an intimate knowledge of plant processes and equipment. This is especially true when the Purchasing Agent is not supported by a strong purchasing staff of specialized buyers for the different materials and equipment, or by an industrial engineering department.

The knowledge that a Purchasing Agent can absorb by making periodic tours through his plant will enable him to talk more intelligently with members of the sales organization about the materials and equipment required. His practical experience will make him more responsive in accepting their cooperative ingenuity and inventiveness which so often have brought important improvements in production quality and costs. Furthermore, the thought that the Purchasing Agent is not just a requisition buyer will be imbedded in the minds of salesmen so that they will not try to bypass the Purchasing Department. The Purchasing Agent with the

(Please turn to page 288)

Jack Rutherford made a good start for a purchasing career by picking Edinburgh, Scotland, as his birthplace, July 22, 1910. He made a good start toward a career in American industry by settling in Detroit, U. S. A., at the tender age of one. After graduating from High School and the Detroit Business Institute, he went to work for the Aluminum Company of America in 1931, and has been continuously associated with that company ever since, with a record of steady advancement.

His first job with Alcoa was in the production department of the Detroit Extrusion Plant. After four years of practical production experience, he was assigned to the purchasing department, and became Assistant District Purchasing Agent at Detroit in 1938. In June, 1940, he was transferred to the American Magnesium Corporation plant in Buffalo as District Purchasing Agent.

An active interest in Association work comes natural to a purchasing man in the Alcoa organization, which has furnished two national presidents of N.A.P.A. Mr. Rutherford has served with distinction as President and National Director of the Buffalo Association. Last June he became a member of the National Executive Committee as Vice President for District No. 8, comprising the Baltimore, Buffalo, Carolinas-Virginia, Eastern New York, Elmira, Lehigh Valley, New York, Philadelphia, Reading, Rochester, Syracuse, and Washington Associations.

The Rutherfords have one son, Jerry, aged 5½. Jack lists his avocations as fishing, golf, and baseball. He has taken time out three times to revisit his birthplace in Scotland.



# Mechanics of Materials Control

Preparing a Stock Control Notice from the stock record.



This is the second of a series of articles describing the methods of purchasing and materials control at American Airlines. The first article, covering the general organization of the Materials Department, appeared in the October issue.

Precise processing of a few tested forms provides positive control of complex inventory.

Flexible system of transfer and interchange of parts integrates stock for scattered stations.

Inactive items are eliminated, stand-by parts are kept to the practical minimum.

In American Airlines operations, with the complex problem of maintaining stocks and accounting for disbursements at many different locations, a station can acquire an emergency item from any other station which may possess it and is closest to the requisitioning station from the point of view of flight time or expediting time. The controls and procedures that make this possible are functions of the Inventory Control Division, which is responsible for the keeping of a basic perpetual inventory record for each item carried in stock and for issuing the requisitions for purchase and replenishment. Thus the division occupies a super-

sensitive driver's seat in the overall materials program of the organization.

Inventory Control is one of four divisions comprising the Materials Department, under the general supervision of G. J. Brandewiede, Materials Director. The other divisions in this set-up are: Purchasing, Stores, and Surplus Sales.

The Inventory Control Division in turn consists of three branches, each in charge of a Manager, reporting to J. R. Wiley, Director of Inventory Control. These branches are: Inventory Planning, Inventory Procedures, and Inventory Records.

The Planning Branch contacts the using departments in respect to their requirements and rates of usage. It

By Joseph Albin

decides what items are to be stocked, and in what quantity, and it places the requisitions. Thus it sets and maintains the stock level. It does the researching and is responsible for approval of stocking new items—those which have not previously been carried in stock, or items which cause an increase in the inventory level.

## **Procedures Branch**

Standardization and revision of forms is the job of the Inventory Procedures Branch. Forms are given an ascendent role at American Airlines, with the recognition that a form can be much more than a piece of paper to help keep records. In this organization, forms are regarded as the instruments of procedures and control, and are carefully designed so that essential information can be efficiently elicited from them. Their limitations are also gauged against effects observed in the handling of the inventory, so that revisions can be made with a higher measure of certainty of getting the desired results. Because of this policy, and because of the complex inventory handled and the flexible method of interstation disbursements, the forms and their processing are especially worthy of study from the point of view of materials control in any large multi-plant type of concern.

One of the more important chores of this branch at present is putting together the Materials Department Manual, which contains a well organized and impressively detailed description of personnel activities. Hav-

ing an objective slant on operations, this branch is in a position to see that the interests of the Treasury Department and other departments are reflected in the forms and procedures adopted. The Procedures Branch is responsible for developing, publishing, and keeping up to date the following:

Materials Department Manual  
Division Procedures of the Materials Department  
Training Courses and Trade Tests

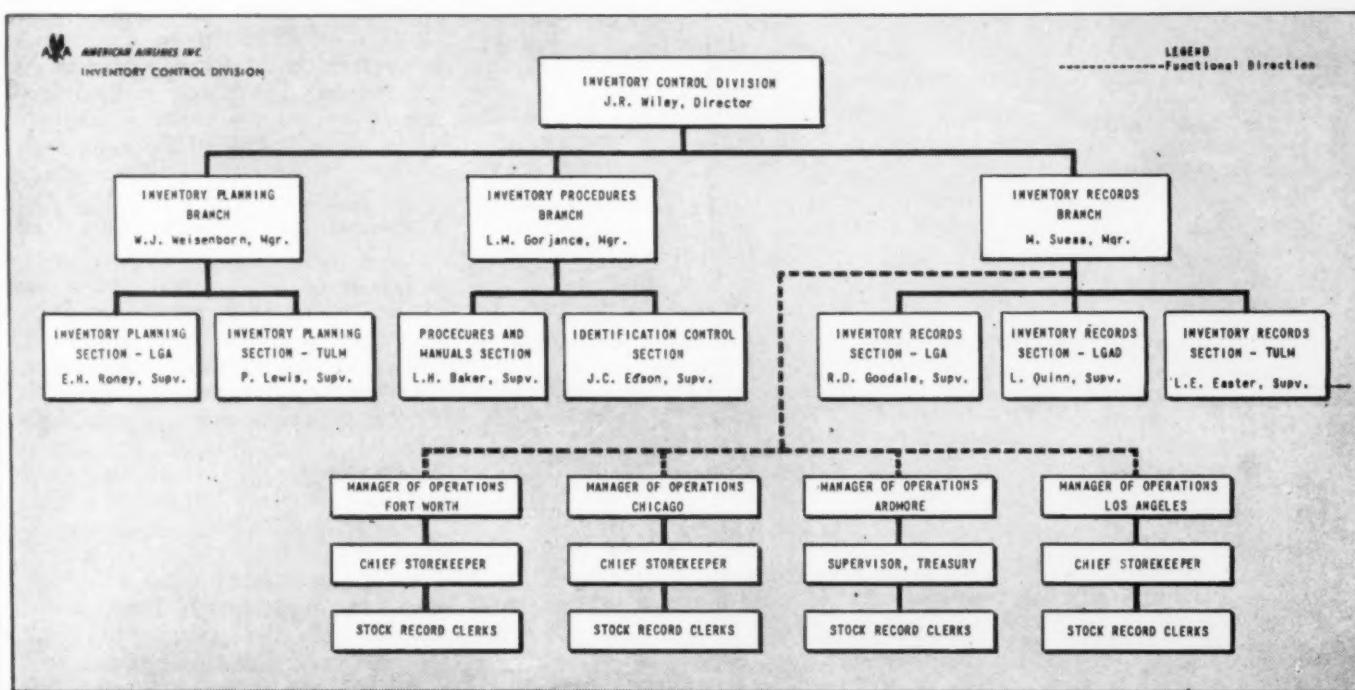
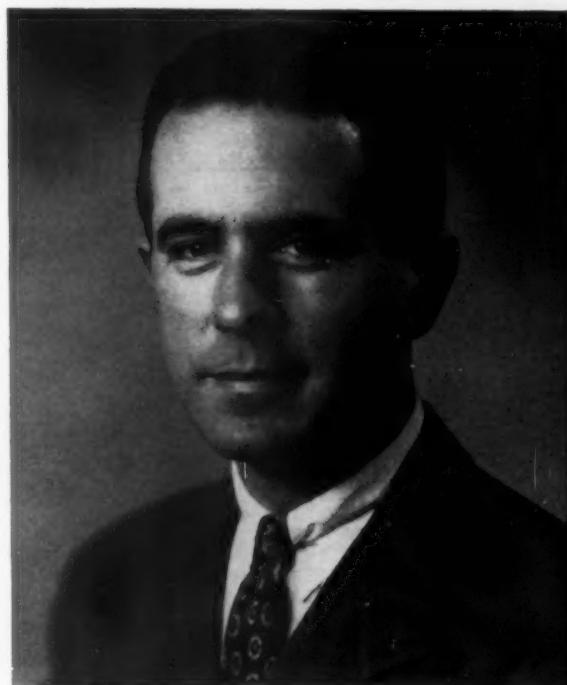
## Spare Parts Assignment Manual System Stock Lists

The last named publication consists of stock lists covering the description, part number, nomenclature, and interchangeability of all items of inventory. Source data is in the form of master cards for each item. In the case of new items of inventory, the proper part number, nomenclature, and stock classification are also assigned here.

John R. Wiley

Director,  
Inventory Control Division  
American Airlines

Mr. Wiley had his sights on the airplane business when he entered the Massachusetts Institute of Technology, graduating in 1933 with a B.S. degree in Aeronautical Engineering. For the next eight years he worked in the air express field, joining American Airlines in 1940. During the war he served in the AAF, in charge of transport operations and aircraft allocations. Prior to his appointment as Director of Inventory Control in January, 1948, he was Assistant to the President of AAL.



The function of the Inventory Records Branch is to keep a perpetual inventory record card for each item carried in stock. These cards are kept in loose-leaf visible index binders. The Records branch enters receipts on this record against each purchase order, and notes the unit prices so that these may be reflected on the forms covering withdrawals or transfers from stock, which are routed to the Treasury Department for adjustment of inventory accounts. There are two forms of stock record card—the short form, 10½ x 4¾, with space for twenty entries, and the long form, 10½ x 9, with space for fifty-six entries used on the more active items.

Each stock record card carries a record of consumption of the item, by months over a two-year period. Care is taken in posting this monthly consumption record to be sure that when a withdrawal or transfer is made it is included in the consumption figures only if it represents a *bona fide* consumption of material. For example, shipping an initial supply of an item to a station would not be included, but subsequently shipping a replenishment supply would be interpreted as consumption.

#### Requisition Forms

Withdrawals from stock by using departments are made on a Material Requisition form (debit). A corresponding form—Material Requisition

AMERICAN AIRLINES INC. AAL FORM CTS H - PRINTED IN U.S.A.										STOCK CONTROL NOTICE - AAL		No. F 292801			
TO STORES SECTION										SUBJECT TO APPROVAL SUPERVISOR OF STORES PLANNING		<input type="checkbox"/> YES <input type="checkbox"/> NO			
SHIP TO										<input type="checkbox"/> END. RELEASE #		<input type="checkbox"/> S. C. N. REQUESTED			
CLASS	QUANT. ORDERED	UNIT	PART NUMBER						DESCRIPTION						
DESIRED PACKAGE QUANTITY			BOOK NO.		UNIT PRICE		AIRPLANE OR ENGINE MODEL		BASIC VENDOR						
JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	MOS.	QUAN.		
S.C.B.-D. OR P.D. NO. DATE OF ORDER BALANCE ON ORDER										SUPERSEDED BY PART NO.	SUPERSEDED BY PART NO.	MANUFACTURE FOR STOCK			
										NEW		CONTROL PERIOD-MAX. MIN.			
										MAX. MIN.		PRESENT QUANTITY-MAX. MIN.			
CONTROL POINT: STOCK BIN BALANCE										RECORD BALANCE					
MAIN STORES SECTION BIN										MAIN STORES SECTION BIN					
REMARKS: DATE CHECKED BY DATE PREPARED BY DATE APPROVED										SUPPLY DEPT. APPROVED					
ORIGINAL TO SECTION CONCERNED FOR REVIEW AND RETURN TO STORES RECORDS										DATE					

AMERICAN AIRLINES STOCK TRANSFER										To be used for transfer of inventory items only. All items to be cleared from stock records at originating station and posted to stock records at destination except those items shown charged to job or code.					
AAL FORM CTF-1040-200-1										S.T. № 555181					
SHIP TO AMERICAN AIRLINES, INC.										DATE _____					
AT _____										HOW _____					
ATTENTION _____										REQUISITION OR OTHER REFERENCE _____					
FROM _____										COMPLETE DESCRIPTION USE MORE THAN ONE LINE IF NECESSARY					
QUANTITY ORDERED	QUANT. TIME SHIPMENT	BALANCE DUE	PART NUMBER	CLASS CHARGE TO # UNIT COST						TOTAL AMOUNT					
BACK ORDERS LISTED ON S.T. NO. _____										*Items shown charged to Stock are to be posted to Stock Records and charged out on C2A when issued.					
STOCK RECORDS POSTED BY _____										MATERIAL CHECKED BY _____					
RECD AT DATE BY _____										MATERIAL SHIPPED BY _____					
1 TO AAL TREASURY DEPARTMENT ON DAY OF SHIPMENT										FORM PREPARED BY _____					



Stock clerks check quantity on hand with that shown on stock record card.

(credit)—is filled out when unused material is returned to the stockroom; this latter form is printed in red for easy identification, to differentiate it from a withdrawal. In addition to the usual information, each of these forms contains a block which must be initialed to show that the transaction has been posted to the stock records.

Transfers of material from one station to another are effected by means of a Stock Transfer form, 8½ x 11, made out in five copies, distributed as follows: (1) To AAL Treasury Department on day of shipment; (2) with shipment for receiving station file; (3) with shipment, for receipt and return to AAL Treasury Department; (4) for originating office file; (5) to AAL Assistant General Storekeeper, New York. As in the case of the Material Requisitions, the posting to stock records is noted on this form.

For requisitioning new items, or

**AMERICAN AIRLINES**  
**REQUISITION FOR SUPPLIES AND/OR PURCHASE**

D 236681

Ship to {

Attention of:

Auth. No. \_\_\_\_\_ Items: \_\_\_\_\_

Date Received Approval: \_\_\_\_\_

ITEMS OTHER THAN THOSE REGULARLY STOCKED MUST BE PLACED ON SEPARATE REQUISITIONS AND THE NEED THEREFOR FULLY EXPLAINED. RUSH ITEMS MUST ALSO BE ON SEPARATE REQUISITIONS AND NOT INCLUDED ON REQUISITIONS COVERING ITEMS NOT URGENTLY NEEDED. COMPLETELY EXPLAIN PART NUMBER AND VENDOR'S NAME, IF POSSIBLE. (If necessary sample or sketch MUST BE FURNISHED, ALSO EXPLAIN ALL UNUSUAL QUANTITIES. OTHERWISE ITEM WILL BE HELD IN SUSPENSE UNTIL FURTHER INFORMATION OBTAINED.

TO AVOID EXCESSIVE TRANSPORTATION COSTS, DO NOT SPECIFY RUSH SHIPMENTS UNLESS ABSOLUTELY NECESSARY

THE ABOVE PROCEDURE WILL PREVENT DELAYS

STOCK TRANSFER NO.	SHIPPED FROM STOCK AT	ITEM	QUANTITY	UNIT	QUANTITY IN STOCK	PART NO.	DESCRIPTION OF MATERIAL OR SERVICES REQUIRED	CLASS	CHARGE TO	ESTIMATED UNIT PRICE	P. O. NO.
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											

STOCK ROOM CLEARANCE—FORT WORTH-BY

CHICAGO-BY

NEW YORK-BY

REQUISITIONER TO FURNISH INFORMATION ON THE FOLLOWING WHEN PRACTICABLE

1. Recommended Date of Supply. 2. Source referred. 3. Purchase of Tools, etc. 4. Tools, patterns, samples, etc., to be issued. 5. Material or parts to be furnished Vendor. 6. Special Inspection Requirements. 7. Name of Inspection. 8. Date to be obtained. 9. Drawing. 10. Part Lot. 11. Instructions. 12. Availability from Supplier. 13. Availability from Service.

**MATERIAL REQUISITION—CREDIT**

AAL FORM 60-28-CREDIT-14-10-284

DATE \_\_\_\_\_

No. E 36426

STATION

C. A. A. NO.

JOB NO.	ENGINE NO.	CODE NO.	CONTRACT NUMBER					
QUANTITY	UNIT	PART NUMBER	DESCRIPTION (USE TWO OR MORE LINES PER ITEM IF NECESSARY)	CL	UNIT COST	TOTAL COST	NEW	USED

MATERIAL RECEIVED BY—FULL LAST NAME	POSTED TO STOCK RECORDS BY	TOTAL COST
MATERIAL RETURNED BY—MECHANIC	SECTION CLERK APPROVAL	APPROVED—MUST BE ON APPROVED LIST

Various forms used for the issue, transfer, or procurement of materials.

for requisitioning items from the field, a form known as a Requisition for Supplies and/or Purchase is used. While this is something of an all-purpose form, regulations require that separate requisition sheets be used for (a) regular stock items; (b) items not regularly stocked, that must be procured by purchase; and (c) rush requirements, that call for special handling and shipping. In either of the latter two cases, and in the case of any unusual quantity requirement, a full explanation is required to justify the purchase. If the requisition is for replenishment of items at a field station, this must be indicated as the purpose.

Stock replenishment for base stations having heavy consumption is handled by means of a Stock Control Notice, usually referred to simply as an "SCN". This form is originated by the clerk at the record book. It contains rather detailed information, taken from the record card, including

consumption, control period, and present maximum and minimum quantity.

The control period data indicates inventory policy in terms of forward coverage. For example, if a "4-3" control period is shown, it means: when inventory is down to a three-month level, order a supply for four more months requirements. This "4-3" control is the prevailing objective for the base stores of the system. Since delivery conditions are now considerably improved, a "4-3" control is in general use today rather than the "9-6" control which was necessary during the war years, when vendors required longer lead time on orders.

For practical purposes, this figure is supplemented on the SCN by a maximum and minimum quantity use figure, in terms of the control period months of usage. The procedure works like this, for example, in the case of a gasket which is being

consumed at a rate of 100 per month. The actual ordering figures are given. Thus, when stock gets down to 300 gaskets, order 400. The 300 is the stock level. As the minimum, it is called the "package". The minimum package is indicated in the stockroom by a wrapping, or by a red tag marked "Notice of Critical Stock Balance", or by other devices serving as a signal that the time has come to order a new supply. When the stock of an item reaches this point, stores personnel notify the Inventory Record Branch and request origination of an SCN. Under regular routine, the posting of an issue which reduces the total on hand quantity to or near the established minimum, is the signal for reordering in the Inventory Record Branch.

The SCN is executed in four copies. It is first routed to the Stores section. The Storekeeper checks actual quantity on hand with the quantity that the SCN shows the

**Stock Record Card, long  
and short form.**

stock record card to have. He puts down the actual bin count. The normal routine would be for the Store-keeper to order the quantity indicated as maximum; however, he may have some knowledge that might lead him to recommend a larger or a smaller quantity than the maximum.

The original copy is then returned to the Inventory Record clerk who initiated the SCN. The clerk now knows that the purchase action has been started, and posts the quantity on order; the commitment so indicated will prevent any duplication of orders.

The second and third copies of the SCN go to the Purchasing Division, stamped "For Purchase Action". One of these is for follow-up purposes. (If it is a Word Order item, rather than a purchase item, these copies go to the Treasury Department.)

The final copy, on heavy card stock is retained in the Stores section files.

A concluding phase in the processing of the SCN results when the purchase order is issued to the vendor for the quantity indicated. A copy of the purchase order goes to Stores; another copy goes to the Inventory

Record clerk, who enters the purchase order number and quantity ordered on the stock record card. The clerk then files the purchase order copy with the SCN copy returned from Stores.

## **Eliminating Dead Stock**

How does Inventory Control know when something is not moving, in order to eliminate dead stock? At the end-of-month closing, the clerk goes through the stock record book to enter the current month's consumption in the space provided for this information. Here trends of usage are clearly indicated for each item. Any item showing zero consumption for a continuous period of 12 months is considered surplus. This card is lifted from the book and placed in another binder known as the Surplus Book.

At a big base, such as LaGuardia Field, the clerk makes out an SCN for the item, marked "For Review Only". This goes down to Stores, and if it is confirmed that the item will not be needed, Stores makes out a Stock Transfer and physically moves the item out of Stores location to a new location called Surplus. It

is then in the province of Surplus Sales for disposal.

As mentioned at the beginning of this article, American Airlines has adopted a flexible inter-station disbursement system to meet the requirements of scheduled operations. One of Inventory Control's most delicate operations is the keeping of records to meet this condition. The inventory level is also being constantly altered by the reallocation of repairable parts.

### **Interchange of Materials**

Each station has a copy of the Spare Parts Assignment Manual, which is a list of rotatable and the more expensive "insurance" parts carried in stock. The maintaining of this manual is assigned to the Identification Control Section of the Inventory Procedures Branch. Identification assigns the official part number, nomenclature, and stock classification. The manufacturer is indicated by a code number. The source from which to order, where to send a part for repair, and the airplane to which each part applies, are indicated. The information on interchangeability of parts is given. The station having

need of such a part orders from the required control point. However, in case of emergency, the station can borrow from the nearest location, determining from flight schedules which station could provide the part in shortest time.

An "Exchange of Repairable Parts" form is used in such transactions. The fourth copy of this form, on card stock, is attached to the part until final disposition is made by the shop, and returned to Stores. This copy has two detachable tabs serving as memorandum receipts for the part in question — Overhaul Shop to Stores, and Stores to Shop. A blue routing tag is also attached for purposes of shop routing, and is reconciled with the Exchange form when the part is returned to Stores. The steps in this procedure may be enumerated as follows:

1. The defective part is taken from the airplane.
2. It is replaced on the airplane with a serviceable part.
3. Defective part is routed to repair point, with form.
4. Part is routed to shop with tag.
5. Replacement serviceable part is shipped from main base stores, with form, to replace the serviceable part that was installed on airplane.

6. Repaired defective part, now serviceable, is returned, with form, from shop to main base stores to await next call from a station.

Whenever operating departments requisition material, or when a station effects a transfer, the Treasury Department must be acquainted with the fact. The basic forms for this purpose are the Material Requisitions and the Stock Transfer already described.



General view of the Inventory Records Branch.

AA Form C218A ED  
Printed in U. S. A.  
**AMERICAN AIRLINES**

**NOTICE OF CRITICAL STOCK BALANCE**

Part No. or Size.....

Description.....

Vendor.....

Critical Quantity.....

Pkg. Opened By..... Date.....

**INSTRUCTIONS**

Detach this card from Critical Quantity Package when opened and forward at once to Section Senior, who will attach to Expediting Request for signature of Storeskeeper.

Bin tag indicating minimum stock quantity and ordering point of a stores item.



AMERICAN AIRLINES  
AA FORM C-44-4-47-50M SEYS-©  
PRINTED IN U. S. A.

**EXCHANGE OF REPAIRABLE PARTS—AAI**

**G 150751**

STATION USE ONLY — FILL OUT BEFORE SHIPMENT		STORES DEPARTMENT USE ONLY	
FROM _____	TO _____	REPLACEMENT SHIPPED DATE	<input type="checkbox"/> NEW <input checked="" type="checkbox"/> USED
DATE REMOVED _____	DATE SHIPPED _____		
QUANTITY & DESCRIPTION			
PART NUMBER _____	SERIAL NO. PART REMOVED _____		
INC. NUMBER _____	SERIAL NO. PART INSTALLED _____		
ENGINE NUMBER _____	PART INSTALLED	<input type="checkbox"/> NEW <input checked="" type="checkbox"/> USED	
SERVICE REPORT NO. _____	STATION DELAY NO. _____		
INTERRUPTED FLIGHT NO. _____	TOTAL SHIP TIME _____		
TIME SINCE OVERHAUL _____	IF CYLINDER, POSITION NO. _____		
REASONS FOR REMOVAL _____			
SIGNATURE _____			
ORIGINAL: TO ACCOMPANY SHIPMENT OF PART TO STORES DEPARTMENT			

Form used for exchange of repairable parts, and shop routing ticket for part being repaired.

# How Many Linear Feet in a Roll?

Requirements of stock and use call for linear measurement.

Convenient chart gives quick answer to conversion problems.

Method can be applied to all kinds of materials.

By W. F. Schaphorst

MANY materials purchased and used in industry come in the form of rolls. Belting, corrugated wrapping, insulation, wire netting, carpeting, sheet metal, are a few typical examples. Sometimes these are bought by weight, which simplifies receiving and invoice checking. But in the use of these materials, and in balancing inventory against the need, the number of feet per roll is the important thing.

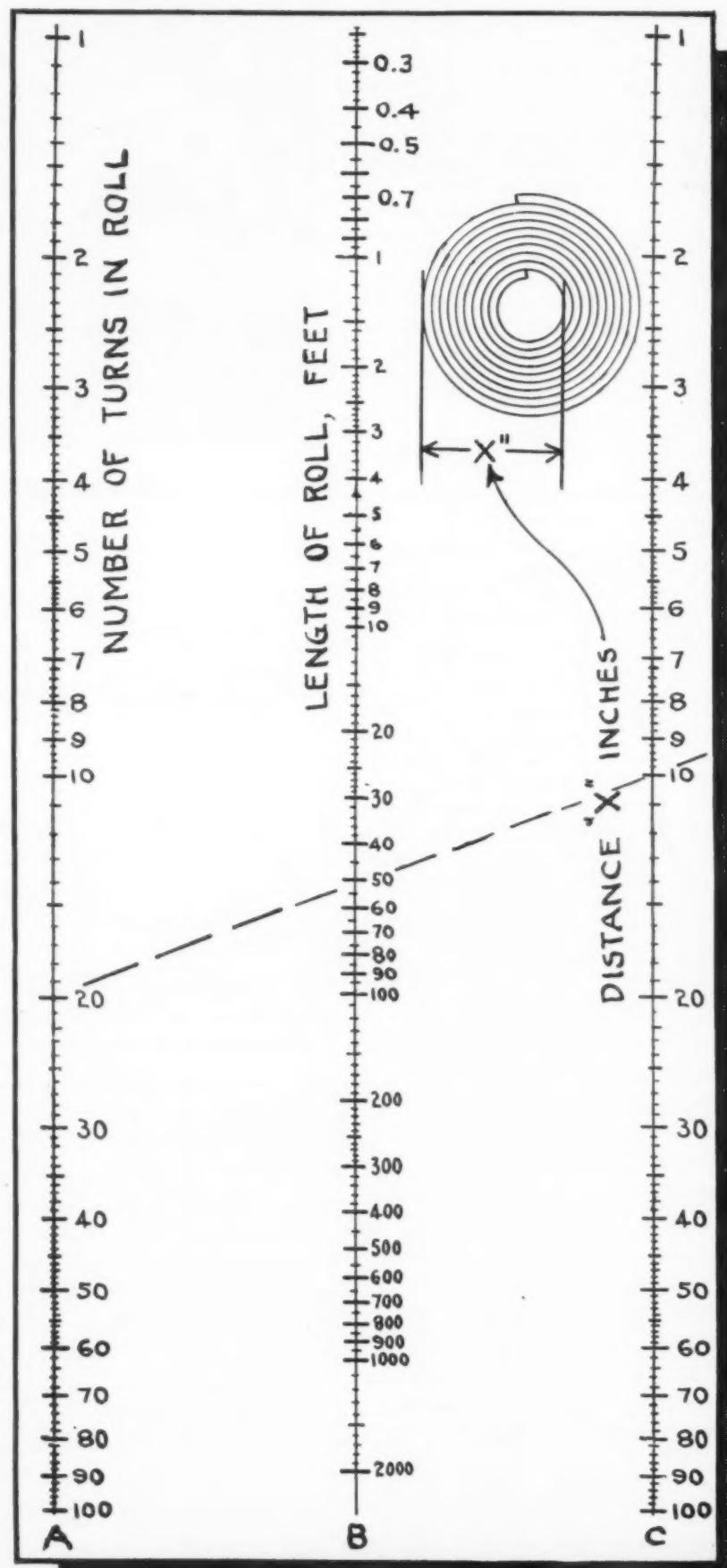
Here is a simple chart by which the number of feet can easily be measured, with a direct reading. It can be used with any kind of material. The tightness of the roll is not a factor, as the increased number of turns compensates for the smaller diameter. Only one measurement is needed, plus a count of the number of turns.

The sketch on the chart shows how to measure the roll. The distance "X" is measured in inches, exactly as shown. This factor is noted on the right hand scale of the chart (Column C). Now count the number of turns in the roll and indicate this figure on the left hand scale (Column A).

To find the number of linear feet in the roll it is necessary only to lay a ruler or straight edge across the chart, connecting these two points. The intersection of this line with the center scale (Column B) gives a direct reading of the length of the roll, in feet.

In the example shown, the problem was to find the number of feet in a roll of material which has 20 turns, the distance "X" being 10 inches. A line is drawn from 20 on the left hand scale to 10 on the right hand scale. The answer is found on Column B, where this line crosses. The length of the roll is a little more than 52 feet.

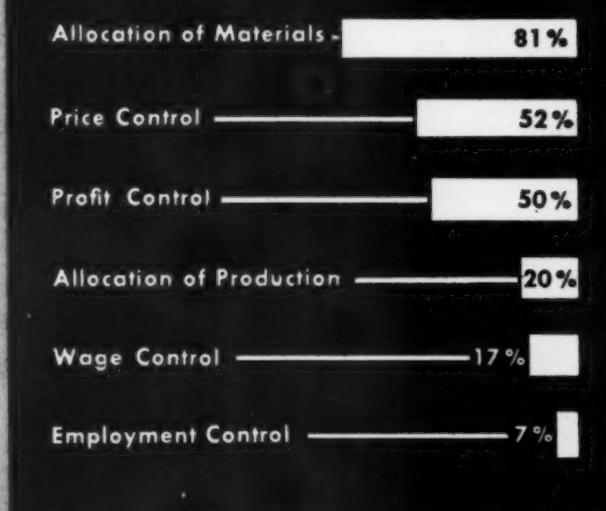
The range of the chart—up to 100 inches for measurement "X" and up to 100 turns in the roll—is great enough to cover any ordinary problem likely to be encountered in the course of business.



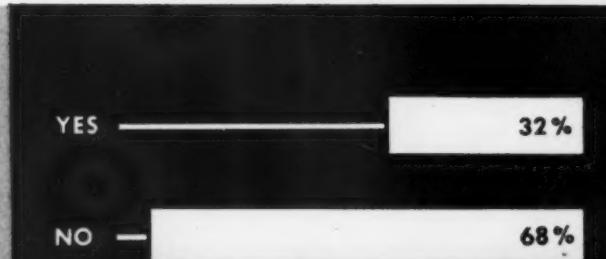
# Will INDUSTRIAL CONTROLS Return In 1949?

Developments in international relations and domestic politics indicate that American business may be faced with further problems in 1949. Our rearmament program, Western European defense needs, and the continuation of E.R.P. will require all types of essential and scarce materials, tending to reduce supply and push prices up. As previously signified, the national administration may be expected to call on Congress for regulation of some areas of the economy. To find out what these projects will mean to business, particularly industrial procurement, we asked purchasing men throughout the country what they anticipated in the way of controls, and how they are prepared to meet them. Their answers follow:

① Which types of controls do you expect to be reimposed in 1949 ?



② Have you made definite provision in your purchasing department to handle priorities in the event such a system is set up in the next year ?



PURCHASING OPINION

③ Have you consulted with major suppliers to assure adequate quotas for 1949 requirements?

?



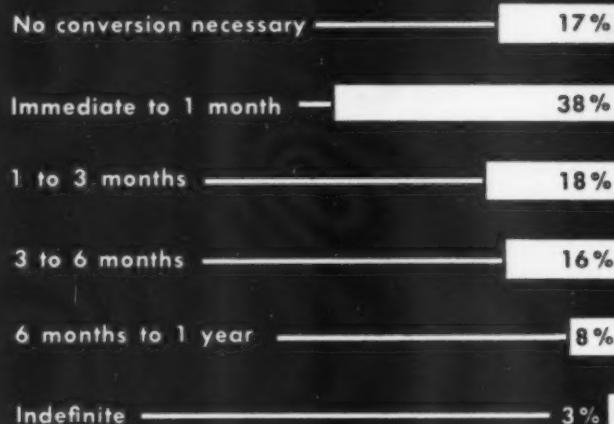
④ Is your company contemplating any change in major product lines to meet possible government requirements for a shift in output from less essential civilian goods?

?



⑤ In the event conversion to military production is required, how long do you estimate such conversion would take in your industry?

?



## —WHAT THEY SAY—

"Why does a free economy need any additional controls unless we have a war?"

"Now that the New Deal has a new lease on life, we can expect anything. Will probably have a labor government in 1952, unless we have a severe depression before that date."

"During the war we experienced fine results with our own priorities staff and we feel reasonably sure that if and when governmental controls are put in effect we will not encounter much trouble."

"Comment? Plenty since 11/2/48."

"If there should be general conversion to the military, and restrictions imposed on manufacture of consumer goods, it is likely a large number of firms will be put out of business before they can be rescued."

"Look for two years of military preparation, as the present administration now has complete control."

This will probably be on a gradual basis with more stabilization than the uncertainties which have prevailed in 1948. It is going to require constant checking and present a greater competitive situation with a consequent lowering in costs and prices."

"My comment? Not printable."

"Present allocation plan for defense contracts not effective enough. Must have a system of priorities."

"In the event government has difficulty placing orders for rearmament requirements (which I understand is happening at present) we anticipate a degree of price-wage and employment control."

"Anything done will be handled when our hands are forced, tempered by 'political expediency'. I do not look for much change until politicians cease looking for their own welfare and start trying to benefit the country. The law of supply and demand cannot be vitiated long."

# What Management Expects of its Purchasing Department

By O. G. Mayer, Jr.  
Oscar Mayer & Company  
Madison, Wisconsin

**Importance of purchasing function calls for an executive type of purchasing officer.**

**Broad view of company operations and policies is essential to a good procurement job.**

**The purchasing agent must be an administrator, leader, cooperator, and contact man.**

WHAT does management expect of its purchasing department? There are numerous ways of breaking down and discussing the duties and responsibilities of purchasing. For purposes of our discussion, I have selected three general phases of the purchasing department duties which seem to me to cover the field reasonably well. First are the duties of the department which concern its internal operations, with no reference to persons or groups outside the department. Second is the performance of duties concerning the relations of the department with other plant departments and individuals. The final phase is the performance of certain duties concerning the relations of the purchasing department with persons and groups outside the company.

#### *Administrative Responsibilities*

To begin with, it seems to me that we should talk first of all about the internal operation of the purchasing department. I have chosen to put the responsibility here, as elsewhere throughout these remarks, directly upon the head purchasing agent. Management has a right to ask him in directing the internal operations of the department to accept responsibility for the successful establishment and performance of a number of mechanical factors and a number of human factors related to the internal activities of the department. We will discuss first the mechanical factors:

1. He is responsible for the maintenance of purchasing records adequate to supply required purchasing

data at all times. These records must provide, easily and quickly for immediate reference, the following information which I have divided into two parts: that which is required for all supply items, large and small, and an additional amount which is required for the larger or major supply items only.

#### *PURCHASING RECORD REQUIREMENTS*

##### *A. ALL SUPPLY ITEMS*

1. All possible practical sources.
2. Specifications set up by the company for purchase.
3. Latest price quotations.
4. Latest stated delivery dates.
5. Experience history of superiority or inferiority of any one supplier's products over or below those of other suppliers.
6. History of past plant usage, including previous costs and all other important historical data.
7. Possible alternate or substitute items or materials.

##### *B. MAJOR SUPPLY ITEMS*

1. All requirements listed above, plus
2. Basic economic information, such as:
  - a. Raw materials used in manufacture of supply item.
  - b. Outlook for continued supply of needed raw materials.
  - c. Processes of manufacture of supply item.
  - d. Production capacity of suppliers.
  - e. Information on general condition of soundness of suppliers being used as sources.

2. The purchasing agent is responsible, with the advice and assistance of the accounting division, for the maintenance of a thorough system of

requisition, purchase order, and invoice controls and approvals to supply him and top management with adequate cross checks without needless duplication. This is something that starts out simply in a small department but gets more complicated and involved as the department and the company expand. The importance of the function is the same, however, no matter how small or large the company may be.

Every purchasing department should make sure that the requisitions for purchase are bona fide and properly approved in advance, that the purchase orders are kept under close control, that the ordering is never done by unauthorized personnel, that invoices are not approved for merchandise that has not been received, and that the cross checks are adequate on all of these matters without needless duplication.

3. The next item of internal responsibility which I have listed as a mechanical factor (although there is some basis for possibly considering it a human factor) is the maintenance of a proper control of hours for seeing salesmen during the week in order to release adequate time in the purchasing department for telephone work, desk work, thinking, and planning. I do not mean by this in any way to skimp on the hours needed for interviewing salesmen. I consider the time spent with salesmen to be of the highest importance in the conduct of purchasing responsibilities. I simply set forth here the view that the hours necessary for seeing salesmen should be kept regular, so that a proper time is set aside for all parts of the job in the department and so that no hodge-podge of jumbled hours of the day is left for performing

*Abstract of an address at the 43rd Annual Meeting of the American Meat Institute, at New York City.*

ing other important phases of the work. It is up to the purchasing agent to set the standards of regularity in an internal matter like this.

#### Specifications

4. Every well-run purchasing department should have at hand a set of descriptive specifications on all items purchased, in order to insure uniformity of bidding when quotations are requested. It is hard to know exactly what you are buying unless you have a description at hand which everyone in the department can read and understand. If you do not have this, you have so many different interpretations possible that you may not be getting prices on the same item at all from different suppliers when you ask them to quote. To have descriptive specifications on hand is simply to substitute the written word, which is permanent, for the spoken word, which is fleeting and disappears.

Some companies require their purchasing departments to set these specifications. Others require other plant departments, such as production, quality control, or research, to set them, believing that the purchasing function is simply to buy what is asked for and that the purchasing department is in a poor position to determine what the specifications should call for. It is my belief that a combination of the two views is best for this purpose, with the purchasing department responsible for requesting the specifications, helping to write them, and seeing that they are always kept up to date.

#### Human Factors

So much for the so-called mechanical factors for which the purchasing agent is responsible. He is also responsible for the successful administration and furtherance of a number of human factors important to the smooth internal operation of his department. Management must expect him to accept these responsibilities and carry them forward with diligence.

The first is the organization of his department, whether it be a single plant or a multi-plant responsibility. All of us undoubtedly have responsibilities for the work of others as well as ourselves, and certainly there can be little question about the importance of good organization in the management of any example of human endeavor involving more than one person.

The successful purchasing agent must be able to visualize and establish the duties of all of his associates,

whether they be few in number or a large group consisting of many specialist buyers. He must know when a man is carrying a full load and when a man could be doing more than he appears to be doing. He must be able to recognize talent and lack of talent, and must be able to get the most out of the persons under his supervision by careful selection of all personnel, by careful assignment of duties, and by careful and constant training of all personnel, both old and new—for training is in no way confined to an initial period of employment, but goes on throughout the entire period of job tenure.

He must make sure that in the organization of his department his personnel includes one or more men capable of assuming his own duties in case of need, such as vacation absence, illness, accident, or promotion. Finally, in the administration of the human factors just mentioned, the head purchasing agent must be a leader of men. It is management's rightful expectation that he supply leadership to those working under him in order to maintain high morale in the department and give its work at all times a sense of accomplishment which will, without question, help to get the job done better.

#### Cost Consciousness

Now that some of the important factors, both mechanical and human, necessary to the smooth internal operation of a purchasing department have been outlined, the basic duty of the department and primary reason for its existence can be properly stated. The performance of this basic duty is essentially an internal operation, or one in which the department itself makes the final decision in the form of a purchase, after all the facts are at hand. This basic duty is as follows: through constant use by the purchasing department of all of the mechanical factors at its disposal, and with the help of the department personnel functioning smoothly through proper application of the human factors, and with the assistance of others within and outside the plant, management can expect its purchasing department to do a first-class job of buying, on their relative overall merits only, all needed items without incurring shortages because of delays or errors, without incurring large quantities of excess stocks of obsolete items, but with constant, zealous striving for the best buys, taking into consideration all factors, such as quantity, price, delivery reliability, and the like on each transaction.

The purchasing department neces-

sarily has the final responsibility to decide on quantities of each item ordered after all of the pertinent information on each transaction is at hand. Stated another way, it is responsible for the maintenance of quantity control in order to secure the optimum unit supply cost. I use the word "optimum" advisedly, for occasional instances arise in which the lowest costing item is not necessarily the one which is best for the purpose.

As a part of the cost-consciousness which should be one of every good purchasing agent's attributes, he must realize also, and always strive to avoid, another phase of cost to the business in the form of errors on his part which cause suspension of production when needed supply items are not delivered on time. I have been acquainted with instances in our industry when entire departments have been shut down for lack of a needed container. This point can also be stated in another way for added emphasis, by saying that a vigorous follow-through is necessary for the purchasing department to employ on all important transactions to insure that the materials or supplies are delivered when needed. Just as it is true that a sale is not completed until the money has been collected, so is it equally true that a purchase is not completed until the goods have been delivered. (In fairness it must be admitted, of course, that not all failures of delivery are directly the fault of the purchasing department.)

Finally, such things as the setting of policies of dividing purchases against purchasing the requirements from single supplier, and a thorough knowledge and appropriate use of alternate sources of supply on major items are important. These things vary between companies and each must decide for itself the best ways in which to conduct themselves in these matters. Suffice it to say that the importance of this difficult work of careful purchasing can hardly be over-estimated and deserves a highly important share of management attention, which is undoubtedly repaid many times over to those management which give it that proper share.

#### Company Relationships

In addition to the work of dealing with and supervising the performance of personnel within the purchasing department, the purchasing agent especially (and others of his staff to a somewhat smaller degree) has the responsibility for maintaining constant contacts with a large number of persons and groups outside his own department in the furtherance of pur-

chasing activities. These contacts and relationships, all of which are finally important to the performance of the purchasing function, fall into two general classifications, namely, the relations of the department with other plant departments, employees, and officials, and the relations of the department with individuals and groups outside the company, including supplier representatives.

Management has the right to expect the purchasing agent to maintain numerous and frequent contacts with other plant departments such as the production, engineering, sales, research, office, and others through regular appointed contacts as well as informal meetings, telephone calls, written and oral communications. One of the best ways to insure regular contacts with other departments is through the participation of the purchasing agent and his subordinates in appropriate plant committee and group meeting work. Such functions as packaging, sales and production planning, utilization of obsolete supplies, and others lend themselves readily to committee work.

The purchasing agent should also secure, investigate, sift, and submit to the proper department heads all possible new ideas from other intra-company sources concerning supplies, new materials of possible use, new sources of supplies, and the like. He should also maintain constant pressure, through meetings with other interested departments, to guard against accumulation of slow-moving and obsolete items. It is so easy for items in the supply inventory to accumulate and pile up through lack of use in the departments, or through changes in emphasis by the sales department, that large sums of money may become frozen in a short period this way. The purchasing department, while often not primarily at fault in such instances, should keep an ever vigilant eye upon the supply inventory figures to avoid accumulation of slow-moving items, thereby keeping sizeable amounts of capital free for more appropriate uses.

#### **Working With Top Management**

So far as relations of the purchasing department with others within the company are concerned, one of the most mutually beneficial and action-productive of all should be that of the purchasing agent with his immediate ranking officer in the company. Management has the right to expect this relationship to be harmonious, mutually stimulating, and always productive of better ways and means of doing the job at hand.

A device which is often highly beneficial to both parties to this relationship is a periodical management report from the purchasing agent to his ranking officer. The details of such a report must be worked out between the parties themselves, but the principles of its use are sound for it keeps the management representative informed on the current activities of the department and also serves as a stimulus to the purchasing agent and his department toward greater accomplishments at all times. Especially important, finally, is the requirement that the purchasing agent furnish all possible ideas and assistance to his immediate ranking officer in the furtherance of their respective responsibilities in the field of purchasing, including the setting of general purchasing policies.

#### **Contacts With Suppliers**

The purchasing department of any company in any industry would be totally unable to perform its required functions if it were deprived of the ways and means with which to make contacts with persons and groups outside the company, for it is with those outsiders that the purchasing department does practically all of its business. It is of utmost importance that the purchasing agent have a keen desire to make the best use of his opportunities for doing business with outsiders, notably supplier representatives, and to train his entire staff to a realization of the importance of this phase of its duties. Not only is it important to maintain regular hours for this work, but also is it important to make sure that these regular hours are adequate, for much is to be gained through constructive meetings with supplier representatives in the way of ideas and information as well as the opportunity to transact the sizeable volume of necessary business. The purchasing agent should have within himself, and should cultivate within those who have purchasing responsibilities, a spirit of desire to see and listen to salesmen (within reason, of course, and only on a business basis), for one of the best possible sources of new ideas arises from those whose business it is to sell.

It has always been my view that certain times within the week should be set aside for seeing salesmen who come without appointments so that the "open door" policy of the purchasing department can be unquestionably maintained. At hours other than these, I believe that salesmen should be seen by appointment only, for a limited number of appointments can be arranged during those hours when



Oscar G. Mayer, Jr., has spent his entire business career with the firm of Oscar Mayer & Company, learning the business from the bottom up in preparation for top executive responsibility. For the past six years he has been in close touch with purchasing work, which comes within his responsibility as Production Manager.

general interviewing is not going on without too much inconvenience to the routine. Another thing that I have always felt desirable is to grant special consideration to out-of-town salesmen who sometimes have difficulty in attempting to adhere rigidly to appointed hours. The general thought behind all of this is to make sure that the purchasing department recognizes that the success of its work depends to a large extent upon the feeling of cordiality and friendliness it imparts to its suppliers, all of which simply goes back to the ever-valuable tenet of treating others as you would like to be treated if you were in their position.

The purchasing agent should also, both directly and through his top subordinates, maintain contacts with other representatives of suppliers of important items in addition to the salesmen he sees regularly and knows well. This should include occasional personal visits to their plants to gain a visual impression of the manufacturing processes associated with important items of supply, physical facilities and capacities of these plants, and other things of significance to give him a well-rounded impression

(Please turn to page 293)



Ward Stevens, President of the Connecticut Association, welcomes delegates to the conference.



National Vice President George Cronin discusses the affairs of District No. 9.



Joseph C. Andrews, General Chairman of the Conference Committee, presiding at the banquet session.

# New England Purchasing Conference

Practical program centered around conference theme of "What to Do."

Proficient purchasing requires basic knowledge applied with techniques of salesmanship.

Question and answer forum deals with topics of timely importance in buying.

DISTRICT No. 9 of the National Association of Purchasing Agents, comprising the Connecticut, New England, Rhode Island and Western Massachusetts associations, held another of its all-star Conference programs on October 21st at the Hotel Bond, Hartford, Conn., with a registration of 250.

The program commenced with a pre-conference get-together dinner on the evening of the 20th and an hour or more of entertainment.

Thomas W. Seavor, Purchasing Agent, Speidel Corporation, Providence, presided at the opening session on Thursday morning. Following an address of welcome by Ward F. Stevens, President of the Connecticut Association, who announced that the theme of the conference was "What to do", born of the changing conditions that confront men in purchasing today, Lieut Governor Robert E. Parsons of Connecticut was introduced.

Stating that Connecticut is particularly proud of the way in which purchasing for the state is handled, Mr. Parsons said, "You occupy a very important position, as important as any group in industry. We are particularly fortunate in having our industry in a favorable position; that is the goal of all of us, and you contribute to it."

The next speaker was George J. Cronin, Purchasing Agent, Commonwealth of Massachusetts, and National Vice President for District No. 9. Mr. Cronin briefly reviewed the activities of the National body, and emphasized the importance of the broad educational program being developed by the National Educational Committee, which he said "should be profitable and beneficial to all."

Herbert Layport, Manager of Purchases,

Wyman-Gordon Company, Worcester, Mass., was the next speaker. Mr. Layport gave a well received talk on "Selling in Purchasing." Defining salesmanship as the ability to favorably impress people with specific ideals so as to obtain the acceptance of those ideas, Mr. Layport queried:

"What do we, as purchasing agents, have to sell?" Interpreting his own question, he said: "The answer to that one is that we have more to sell than any salesman who comes to our offices, and like the salesman, our success is measured by how well we do our job.

"First of all", he continued, "we have ourselves to sell—our department, our ideas for saving money for the company, and oftentimes we have a harder job selling new products and new applications for old products than any salesman has in selling the idea to us.

"Who are our customers? First of all, Management; then right on down through the whole organization including Sales, Advertising, Engineering, department heads, foremen, and the men in the shop, and last, but not least, the salesmen who come to see us, plus all our business contacts. We certainly have customers enough to keep us busy all our working hours.

"It is absolutely necessary to sell ourselves, our department and its operations, to management. The position and importance in which we are held by management depends a great deal on how well we have done our job of selling. Needless to say, selling alone will not do the job if we have not done a good job of purchasing. We are assuming we have, but have we let management know about it in a way that is impressive, and will bring the desired results?

"We have found we do our best

overall selling job to management by using the report method. These reports must be carefully prepared, contain essential information in a form easily read and understood, and presented to management personally. Here is where the selling comes in. The effectiveness of this contact depends upon you.

#### A Yearly Report

"Once a year we send in a report covering the year's Purchasing Department activities. It first lists all the vendors alphabetically from whom we purchase material, and the total amount in dollars purchased from each. This is an accumulative report kept over the years, so that easy comparison can be made with preceding years. Grand totals give a quick overall picture.

"To this we have added special accounts such as the power bills, kept by kilowatt hours and dollars, by months and years. This is a most valuable record as from it we are able to pick up trends, or unusually large usages. From a study of this power report, we were able to sell management the necessity of putting a man on power conservation study. This resulted in a savings to the company of nearly \$1,000 per month.

"The report also contains a number of special accounts where we have been able to effect real savings. This report has always been received favorably and followed by a note of appreciation from our president.

#### Other Departments

"Selling ideas to other departments calls for a high type of intelligent salesmanship, backed by facts. It is human nature to resist the efforts of an outsider telling us how to run our

respective departments. On the other hand, if the proper amount of thought and effort is applied intelligently, we will receive cooperation to the benefit of the entire organization.

"An outstanding case in point was the procurement of a small aircraft component. The engineering department specified very close tolerances. It was necessary to have each part made by hand. The purchasing agent conceived the idea of having the part die cast. The engineering department said "No" most emphatically. Most purchasing agents would have let it go at that, but this one accepted the refusal as a real challenge and sat down to figure the thing out.

"He reasoned that if the tolerances could be opened up just a little, there was no reason why the part could not be die cast. He called in the representative of the die casting company and obtained all the technical data possible, plus some very important cost figures.

#### Department Heads and Foremen

"With this information available, he called upon the chief engineer and really did a sales job. The result was entirely satisfactory to all concerned, and the cost of this item was cut from \$110 each to 32¢ each. Many examples like this followed, as it became an interesting and profitable game selling the engineering department new ideas and methods which cut costs.

"When we obtain the whole-hearted cooperation of those with whom we are dealing, we are really selling. The reverse is also true, and we can trace most of our failures to our inability to sell someone an idea or proposition. Such failures usually cost us prestige and usually cost the company money.

"On the level of department heads

and foremen, here is an example of what we mean by bad and good selling. The Manager of Purchases noted that the expenditures for power hacksaw blades were unusually large. He conceived the idea of sharpening and reusing them. It was found that other companies were successfully resharpening their blades.

"Figures were obtained, methods studied, and prices obtained on sharpening equipment. The case looked like a "cinch". Selling the storeskeeper was easy but essential. Then it was a matter of selling management. Management looked the figures over and found the proposition sound. The green light was on, and blades that came off the machine were resharpened ready for reuse—but here the whole program ended. The department head had not been sold and he bitterly resented the invasion of his bailiwick and utterly refused to use the resharpened blades. He told his men that they were no good, and not to use them.

What to do next? See the works manager again; he was sold. Orders went out that the resharpened blades had to be used. You can guess the results. They cut crooked, broke easily, etc. We decided to paint the blades the same color as new ones, but you cannot fool shop men.

"It was decided to just let the matter drop for the time being, and then go to the department head and sell him on the idea that it was his idea in the first place, and that he certainly was to be congratulated on devising a method for saving so much money for his company. Here are the results in actual purchases: 1942, \$30,021.65; 1943, \$33,688.04; 1944, \$16,369.94; 1945, \$9,856.99; 1946, \$5,170.19; 1947, \$365.40.

R. M. Kimball, P. K. Tracey, and W. J. Roemer compare views and experiences on today's buying policy.



**Purchasing Department Forms**  
**F. W. Sickles Company**  
**described at the**  
**New England Purchasing Conference**

F. W. SICKLES CO.		PURCHASE REQUISITION PRIME MATERIAL		Nº 20448
PLANNING DEPT.		REQUIREMENTS		
QUANTITY	ITEM NO.	DESCRIPTION		
DELIVERY SCHEDULE				
QUANTITY	PERIOD	STARTING MONTH	DATE	DELIVER TO
				STOCK ROOM <b>A</b>
REQUIRED FOR				
CUSTOMER	FACTORY ORDER NUMBER	UNIT	AMOUNT	
REQUISITIONED BY	DATE	APPROVALS		
		SECTION HEAD	DEPARTMENT HEAD	DIVISION HEAD
PURCHASING DEPT.				
PURCHASE ORDER NO.	VENDOR	QUANTITY	PRICE	UNIT
TYPED BY	DATE	BUYER'S APPROVAL		PURCHASER'S APPROVAL
ACCOUNTING DEPT.				
ACCOUNT NUMBER	PROJECT NUMBER	AUDIT REVIEW	COST REVIEW	

The Purchase Requisition is initiated by Inventory Control after a sales order is received and processed through Production Scheduling.

The Purchase Order (below) is a short form, each order covering only one item, for convenience in follow-up, reference, and possible adjustment. Reverse side of office copies is ruled for record of deliveries.

PURCHASE ORDER		THE F. W. SICKLES CO.		M 10425													
		MAILING ADDRESS — P.O. BOX 181 SHIPPING ADDRESS — 162 FRONT ST. CHICOPEE, MASS.															
<small>THIS PACKAGE MUST HAVE A PACKING SLIP ATTACHED WITH PART NUMBER, QUANTITY AND QUANTITY MARKINGS. THIS SAME INFORMATION MUST APPEAR ON ALL CORRESPONDENCE. INSIDE, ATTACHING PACKING SLIPS COVERING LAST SHIPMENT ON ORDER NUMBER M 10425.</small>																	
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<small>DISCREPANCY AMOUNTS MUST BE COUNTERBALANCED BY PURCHASE ADVICE</small>																	

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TOOL DESCRIPTION											
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"All of which goes to prove it is not what you do that counts, but how you do it. Selling in Purchasing is the answer to many of our problems."

Mr. Layport in the course of a discussion, said that the cost of the sharpening equipment was \$485, and that the machine is still in use. He also stated, "We have proved that we can afford to sharpen a brand new blade because it cuts much faster."

In regard to the annual report to management, he reiterated that "we do not send the report to management; we take it to management and go over it item by item. It is the most useful thing we have ever found, not only in impressing management with the volume of business we are doing, but also in our dealings with salesmen. Not many salesmen are familiar with their sales to us. The report has enabled me to squelch a great many misleading statements. We have a complete record."

"The job of selling the purchasing department," he concluded, "is a never ending job and it is one of the most important things we have to do—to sell ourselves to our people, and all with whom we have dealings."

#### Caveat Emptor

Raymond W. Dixon, Purchasing Agent, Brown & Sharpe Manufacturing Co., Providence, R. I., was the next speaker, his subject being "Caveat Emptor—Let the Buyer Beware".

I feel that we should all be our own business statistical bureaus. We should consult every available source of information. Above all we should not overlook the NAPA Bulletin. From the first page to the last it is full of pertinent information and

written in a forthright fashion that leaves no doubt as to the intent of the writers.

"Then there are the invaluable reports on the Commodity Committees. Beware of passing up Haney, McGill or Zelomek. And once a month reserve sufficient time to read and digest Bob Swanton's compilations of the Business Survey Committee. Nor should we fail to pay heed to the comments of our daily callers, the salesmen. They often have information which can be of real value.

"We should beware of becoming too engrossed in daily routine, and thus overlook the major problems that loom before us. A recent report issued by the National Industrial Conference Board lists ten functions for which the Purchasing Department is commonly responsible; another list shows ten other functions occasionally assumed, and a third list, a sort of resume, shows 33 functions that are, in part at least, responsibilities of the Purchasing Department.

"Acquiring a multiplicity of other duties may appear to enhance our position in the eyes of management or in our own eyes to make us the "indispensable man", but it can only result in the neglect of our basic purchasing function.

"I strongly recommend a close study of the July, 1948 issue of PURCHASING Magazine, a monumental work on the Purchasing Department of the Ford Motor Company. It contains much on general policy that can be adapted to our own organizations, for it is sound doctrine whether applied to an industrial empire or to a small business principality. Much can be gained by studying these chapters on the Ford organization,

for they present an actual exposition of a Purchasing Department that must function smoothly.

"Let the buyer beware of becoming a pawn in the hands of an individual or group having ulterior motives. Within the past few months many of us have been importuned to 'write our congressman'—first on pig iron, on basing points, on scrap, and finally on *L'affaire Kaiser-Republic*. We should examine carefully the facts and motives of those calling for political actions.

"Let the buyer beware that he does not overlook his function as a salesman for his company. The treatment accorded a salesman is a big help in 'selling' our companies. We can instill confidence and goodwill in our visitors and make them real friends of our companies. Let us beware of creating unfavorable opinions of ourselves; beware of failing to be true salesmen of good will.

"We should beware of being self-sufficient and should not feel that we are competent to judge the value of all products being offered to us. We cannot all have a Purchasing Department like Ford's with a full complement of engineers and technicians, but we do have in our organizations competent engineers who can intelligently discuss problems presented by our visitors.

"We should not pass up our prerogative of screening our visitors. It is a part of our duties to separate the chaff from the wheat, but if it appears that our visitor has a product worthy of consideration we should see that he has the opportunity to tell his story to the proper party.

"In this era of fast changing price schedules, we should be extremely

Ralph Fortier tells about buying problems in the radio industry.



Daniel Donovan and Ralph Berry ponder the educational program for purchasing agents.



Raymond Dixon gives a modern interpretation of "Caveat Emptor".



price conscious. I do not mean that we should consider price over quality and delivery. I refer to the need to be on the alert for any change in net cost without changing the base price structure.

"For one thing there is the cash discount. I find that some industries are alerting their policies on cash discounts, and while with one supplier it is perhaps insignificant, in the overall picture it amounts to considerable. There too is the tendency to change prices to f.o.b. supplier's plant. In the case of basic commodities—steel, pig iron, etc., we are fully aware of the change, but with changes in pricing policy on several items, the matter rather sneaks up on us. We should beware of such changes taking place without our knowledge and without revision of our competitive price files.

"Beware in the selection of your suppliers. Check them as carefully as your Credit Department investigates the financial standing of your customers. Ability to meet your every requirement should be the yard stick in making new procurement connections. Be sure that they have plant capacity to meet your requirements. This is especially true where tools or dies are involved. Once a company has your equipment it is not always easy or possible to change sources.

"In the selection of sources, do not overlook your local dealers. In most cases, prices are on a parity but it is worth a slight differential to have at hand a source that can give adequate pick-up service. Surely, if he is able to take care of your emergency orders, usually handled at no great profit, he is entitled to some of the more lucrative business. Such arrangements result in mutual benefits.

"We should beware of a false feeling of our own importance. Our good friend George Renard tells how successful our association is, and Stuart Heinritz conducts a campaign to glorify us in the eyes of management. This is all to the good, but I am afraid that we are beginning to believe all these complimentary things without reservations. We are an important cog in the industrial machine, but we can attain the position ascribed to us by our good friends Renard and Heinritz only by being worthy of their praise. Let us arouse ourselves to the fulfillment of our obligations to the purchasing profession.

"Beware of making your association a supper club. Unless members derive some real benefit from the meetings, interest in the association is sure to wane. A good dinner is hardly sufficient to justify continued attendance. Beware of making the association a closed corporation. Try

to have as many members as possible on active committee work.

Beware of diluting purchasing influence by admitting pseudo or hyphenated P.A.'s whose interest in procurement is minor. Beware of failing to back up your association activities by becoming only a 'rider.'

"The slogan, 'Let the Buyer beware', should be a challenge, awakening us to our responsibilities. It should make us conscious of changing conditions and our obligations to the end that our job of purchasing will justify its present high position in industrial organizations."

#### Afternoon Session

Don B. Sistare, purchasing agent, Wico Electric Co., West Springfield, President of the Western Massachusetts Association, presided at the afternoon session, first introducing Mayor Cyril Coleman, who formally welcomed the visitors to the city of Hartford. National Vice President George Cronin also read a telegram from President Ralph Keefer of the National Association, extending greetings and best wishes for a successful conference.

#### Buying for the Radio Industry

The first scheduled speaker was Ralph L. Fortier, Purchasing Agent for the F. W. Sickles Co., Chicopee, Mass., who presented a paper on "Buying for the Radio Industry." Mr. Fortier briefly reviewed various industry factors that affect the procurement function, and the paper procedure that follows "after an order hits the sales department."

He stated that the average five-tube AC-DC unit of today is a complex affair containing several hundred separate parts each of which has a distinct function, electrical or mechanical. This year the accent has been largely on FM receivers and television, and a glance at the chassis of the latter will show that it consists of several thousand parts or soldered connections, reflecting the enormous types and volume of materials and components that must be purchased.

When a new model is developed, the bill of material specifies catalog items which are ordered quickly and rushed into the plant. The custom-made items are usually ordered last. They take the longest time to procure due to special tools, dies, molds, etc.

The Sickles Company makes coils, approximately 10 millions of all types annually. One of the major problems confronting suppliers lies in the overall policy of the industry, Mr. Fortier said. When the war ended there were

no radios, and it was the feeling that the market was infinite. Then the warehouses began to swell, and purchase cut-backs were feverishly initiated. It was decided to make only what could be sold, and the most recent plan is to make only what has been sold. Lead-times have shrunk to five weeks; projected, long-time programs are a thing of the past, and competition in regard to both price and performance has sharpened.

Another problem, Mr. Fortier explained, lies in the fact that many suppliers "cannot realize why narrow tolerances are set on what is apparently an unimportant dimension. We annually buy miles of Bakelite tubing, the majority falling within a plus or minus .001 limit on the OD, and a plus or minus .002 on the ID. The wire on these small tubes is kept within tenths of thousands." Stressing the importance of inspection, he said that haphazard checking would result in untold scrap losses; "your radio would be bringing in WTIC where WDRC should be and a lot of inspectors would be looking for new jobs.

Careful schooling of vendors has been necessary. For instance, condenser plates must be free from burrs, and it has taken years to perfect dies that will produce plates with really smooth edges. Another problem lies in the fact that the engineering group wants Tiffany quality at Woolworth prices.

The parts purchased by the Sickles purchasing department fall into 66 classes with over 7000 items in the price record file—not listing each size of the different types of fasteners individually.

"Because of today's changing requirements", he continued, "we op-

Governmental purchasing agents held an informal meeting during the noon recess.



erate theoretically as a job shop, and order strictly on requisition. However, in many instances, this is not practical, and the good old minimum and maximum standard is resorted to. This requires constant vigilance or an unhealthy unbalance can pop up in inventory.

"This type of requisitioning results in endless change orders increasing previous orders and is probably not an ideal condition, but in event of a cancellation or an engineering change, we can stop shipments on certain quantities or segregate cancellation charges for any customer quite readily. Every purchase order or change order refers to a definite requisition and in this manner Accounting can spot instantly or accumulate the charges it requires."

"The personnel of our department places approximately 25,000 purchase orders annually", he concluded. "It consists of one buyer servicing the engineering departments only for speed in sample and model development; and one buyer for M.R.O. and toolroom orders. Two buyers, each assisted by a secretary, and I, buy all production items. Three expeditors follow all orders. One girl types all purchase orders. All prints and inquiries are mailed by buyers' secretaries who maintain a follow-up file to see that the proper acknowledgments are received from the vendors. It is the secretary's duty to keep the buyers' purchase record cards up to date.

"All purchase requisitions are scanned and initialed by the purchasing agent before the purchase orders are typed. All orders of \$300 and over must be signed by the Purchasing Agent. A copy of each purchase order is sent to the Vice President in charge of Operations, who is a for-

mer Purchasing Agent. This enables him to keep in close touch with what is going on in the purchasing department."

#### Machine Tool Buying

William Horowitz, Vice President, Botwinik Brothers Co., New Haven, next made a talk on "The P. A. as a Machine Tool Buyer." He characterized the machine tool industry as being a relatively small one, but a very important segment of the national economy, a basic industry with a normal production running into hundreds of millions of dollars.

Sources of supply for machine tools, he said, may be divided into the following: (1) Manufacturers of new machine tools and their direct factory representatives; (2) Authorized dealers; (3) Used machine tool rebuilders and dealers; (4) Auctions and liquidation; and (5) Government surplus.

Trips to manufacturers plants would be of benefit to the purchasing agent, he said, and to his company. "Fortunately", he continued, "most present day machine tool salesmen have an engineering background and are able to enlighten buyers on manufacturing processes. Direct factory representatives who are dealers generally handle a multiple line of basic machine tools. In the majority of cases, these dealers are experts in their fields. In addition, machine tool rebuilders, a relatively late development in the used machinery field, now serve customers on a nationwide basis."

*Caveat Emptor* applies to persons who purchase at auctions. Auctions, legitimately run, perform a necessary function, but expert care should be

exercised in buying at them. The services of consultants, whether from your shop or elsewhere, are a safeguard in buying machine tools at forced sales and auctions. The availability of machine tools from government surplus is a thing of the past.

"In general, not too much of the purchasing agent's time is taken up with buying capital goods. Knowledge of the problems of capital goods purchasing is used but rarely and at widely spaced intervals.

"In most plans for junior purchasing executives great emphasis is placed on proficiency in the buying of everything but capital equipment. Our training programs can be seriously criticized for their failure in this respect.

"A recent survey shows that 88% of the machine tool salesmen seek entrance to the shop. Many purchasing agents bar their way, to the ultimate disadvantage of both the buyer and the seller. For background purposes, the salesman should be permitted to enter the factory, with the understanding that the ultimate decision rests with the purchasing agent in the front office. The respect of the seller cannot be gained unless the buyer is thoroughly qualified to pass judgment on the preliminary negotiations.

Mr. Horowitz said it would be to the credit of the purchasing agent to learn more about how to buy machine tools. To accomplish this purpose he must work in harmony with and learn from the shop people; they are the experts. He should not give the impression of being anxious to usurp anyone's authority or prerogative. Buying is his profession, and he must broaden his knowledge—learn from all sources.

"To make yourself an expert on capital goods", he continued, "consult all available sources of information—your shop people, salesmen, trade publications, catalogs, and the public library are available to help you at every turn. Study the problems involved. Accompany your own factory man when inspection is to be made of a machine being offered. This will give you first hand information usable at that moment, and at many future opportunities.

"Acquaintance with the financial aspects of machine tool purchases is a *sine qua non* to a complete understanding of the problem. Will the unit save money and earn back that capital expenditure? Is the old machine cutting down the profits of the organization, and therefore had it better be scrapped? Brief yourself on the tax angle of obsolete equipment—consult your financial authorities on this ever-present problem."

(Please turn to page 286)

Herbert Layport sells buyers on using more salesmanship in the purchasing job.



Ray Bingham and Tom Daley greet delegates at the registration desk.



# What is the Heat Pump?

● By Donald Frederick

New interest has been developed for an old process, looking to wider applications.

Refrigeration in reverse can be used as a home or factory heating.

Economic factors needed are a mild climate and low-cost electric power.

DURING the past three years there has been considerable talk and writing about a "new" kind of heating system called the "heat pump," and in many instances there are suggestions that this almost-revolutionary kind of heating system is something that was discovered very recently, that the war held up its actual commercialization, and now that conditions are getting partly back to normal, this new method of heating homes and factories will soon be on the market.

In the first place, machines called heat pumps have been known to engineers for about 100 years. Everybody who owns or operates a refrigerating machine of any kind is familiar with a heat pump because any refrigerating machine is a heat pump. What is actually being talked about now is the use of refrigerating machines for "heating" instead of the "cooling" for which they are commonly used.

There are all kinds of refrigeration, but in general commercial refrigeration is done mechanically for reasons of exactness, performance, and efficiency. Mechanical refrigeration is done by a machine, utilizing a substance called a "refrigerant" in a system called a "refrigerating system". A refrigerant is a material that may be readily converted from a gas to a liquid and *vice versa*. Common refrigerants are freon, ammonia, carbon dioxide. These materials are valuable as refrigerants because they "boil" at lower than normal temperatures. When boiling takes place, as occurs when sufficient heat is applied to a vessel containing water, vapor is formed, and when this vapor is formed heat is required to do it.

Note Figure 1, in which an elementary refrigerating system is shown. At (A) a machine known as a "compressor" is shown; this machine is drawing in vapor under low

pressure and "pumping" it up to a higher pressure. In the process of pumping the vapor to a higher pressure, energy is added to the vapor, and this energy is fed to the motor (B), which drives the compressor, in the form of kilowatts. In a very short period of time a kilowatt is converted into mechanical energy at the motor shaft and this mechanical energy is transmitted to the compressor by belt or direct connection, and the mechanical energy is transformed into heat by the action of the compressor on the gas. This heat may be measured in terms of BTUs, one British Thermal Unit being the amount of heat that will raise a pound of water one degree F in temperature when that water is at 60 degrees F.

Referring back to the diagram in Figure 1, the gas under high pressure flows to (C) the condenser. The condenser is a system of double pipes or pipes enclosed in a tight casing. As the high pressure gas flows through the pipes cold water is passed over the pipes. This "condensing water" is much lower in temperature than the gas and consequently there is a transfer of heat from the gas to the water; the gas is cooled and the water is heated. As the gas is cooled it returns to its liquid form. Three things pertaining to heat have happened so far in the process: The low pressure gas contained heat when it went into the compressor; the compressor added more heat to it when it increased the pressure; the gas lost its heat of "vaporization" when the water cooled it in the condenser. In commercial refrigeration installations the water, that has now become heated, may be dumped in the sewer or it may be pumped to cooling towers or spray ponds where its heat is given up to the atmosphere and where it is cooled again so that it may be returned to the condenser

and carry away more heat.

Referring again to Figure 1, it is noted that the liquid refrigerant, under high pressure, leaves the condenser and flows to (D), the "expansion valve" which is used to throttle the flow of liquid refrigerant into the "evaporator" (E). The evaporator is being kept under low pressure (which may be a partial vacuum) by the suction of the compressor. Because of the differential in pressure between the high pressure liquid refrigerant and the low pressure in the evaporator, the liquid refrigerant "boils" and vaporizes in the evaporator; in vaporizing the refrigerant must take its "heat of vaporization" from whatever substance is contained in the coils of the evaporator. In Figure 1 this substance is shown as water which is pumped through the evaporator, from a well, by the pump (F). Note that the water which has given up its heat in the evaporator is returned to the ground or to the well. The cycle, as outlined describes the operation of a "heat pump."

Figure 2 is a repetition of Figure 1 with certain additions. These additions are a hot water circulating pump (G) which takes away the heated condenser water from the condenser (C) and pumps it through the heat exchanger (H) which may be, for illustrating purposes, a radiator. The heat radiated may be used for space heating or for any other purpose such as an industrial process. The heat radiated is made up of the heat taken out of the evaporator by the expansion of the refrigerant and the heat added to the refrigerant by the mechanical work of the compressor. After the heat in the condenser water has served some useful purpose it may be returned to a system of wells, to a lake, or to some other original source such as an artificial spray pond or a system of cool-

ing towers where it can be cooled and returned to the condenser to do its work all over again.

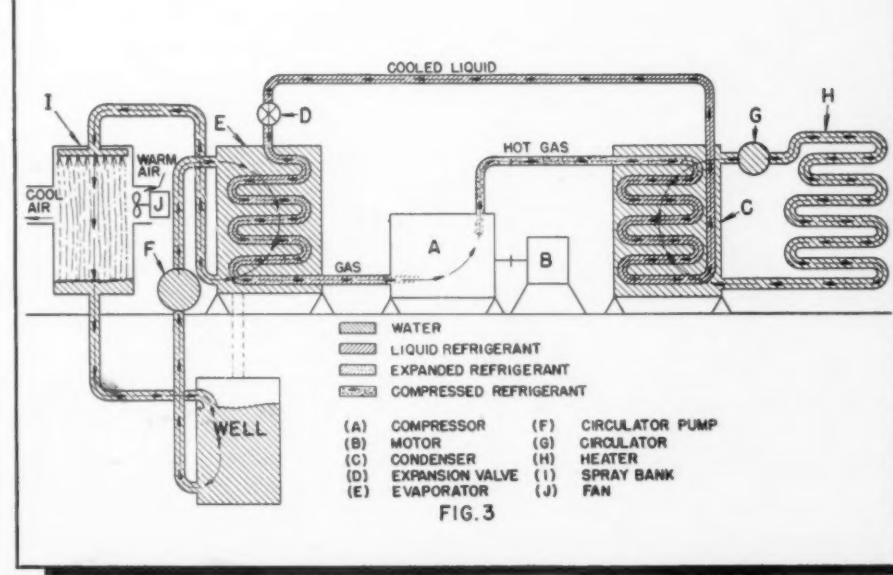
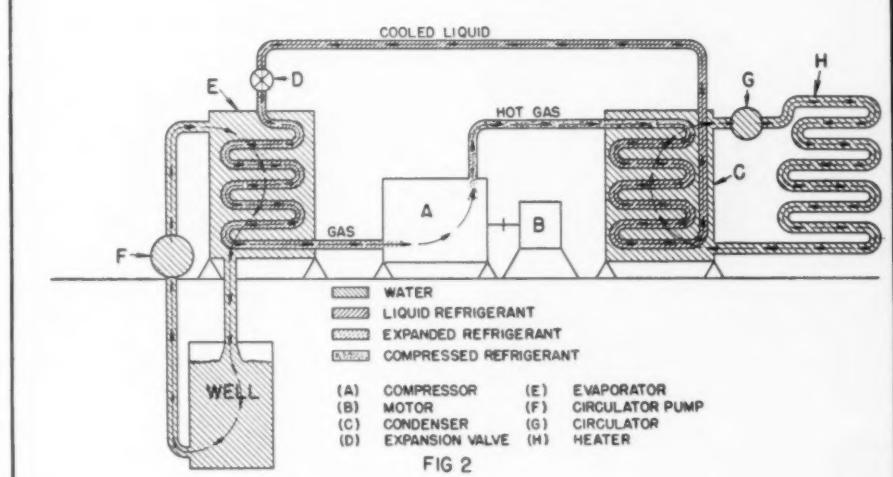
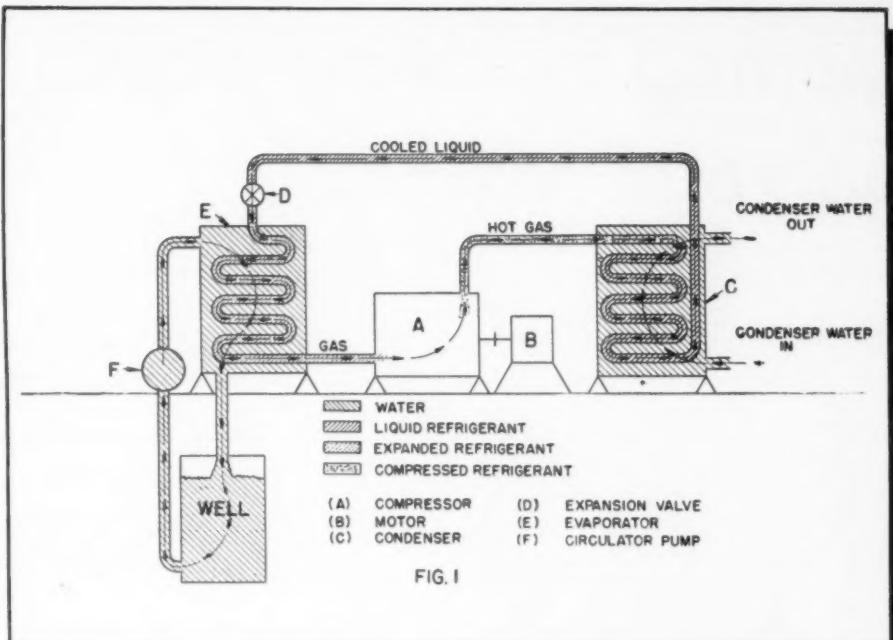
Figure 3 is in turn a repetition of Figure 2 with certain additions on the evaporator side of the system. Here the cooled water from the evaporator is taken through a bank of sprays (I) through which a stream of air is blown by the fan (J). This illustrates the heat pump being used for cooling air. Figures 2 and 3 show the heat pump in its extremely elementary form being used for heating in the winter months and for cooling in the summer time. It is obvious that the system approaches the ideal in that all of the dirt, ashes, fumes, smoke, etc., are eliminated from the heating system. The system also approaches the ideal in that it is automatic the year around with the exception that a valve or two must be turned off or on to switch from heating to cooling. For example, when the heating season comes, the condenser water is circulated through the radiator; for cooling, the condenser water leaves the condenser direct for its source and the chilled water from the evaporator is circulated through the sprays where it cools the air circulated by the fan.

Obviously the system may be simple or complicated depending on the size, the number of heating or cooling units, such as radiators or sprays, and whether or not additional means are used for circulating heat such as fans or ductwork for heated air.

The heat pump's use is a matter of geography and also a matter of economics. The heat that becomes available is of a low grade in that the BTU contained in the condenser water is of a low value for each pound of water circulated. When compared with steam that gives up its heat in a radiator, there is a vast difference. The crux of the whole system is the fact that, for all practical purposes, the system is an electrical heating system supplemented by heat contained in the water due to its being in the ground and being warmed thereby.

Engineers consider the system quite satisfactory and commercially sound for regions where winter temperatures are not too severe and where electric power rates are low. This means that geographically, parts of California, Florida, and possibly sections of the country adjacent to the Gulf and many South American countries would be suitable for heat pump installations. If such sections

(Please turn to page 294)



# Getting the Most from Salvage Materials

• By E. L. Cady

Ingenuity is needed to get maximum use or return out of salvage items.

By-product sales convert a liability into a profitable asset.

Coordinated salvage program centers in the purchasing department.



Processing pyrethrum produces both a standard product and a salable by-product.



Development laboratory research sometimes poses problems of by-product disposal.

THE Dodge and Olcott Company division of the U. S. Industrial Chemical Company has had 150 years of manufacturing and importing history in the U. S. in which to develop a method for handling the extremely complex scrap and salvage problems of the drug, spice and similar products business.

V. H. Fischer, Vice President in charge of Purchasing, directs all scrap and salvage disposal plans. This executive in turn arranges for each form of scrap and salvage to be handled by the fellow executive who is in best position to do so. Thus the entire effort is on a company-wide cooperative basis.

The situation illustrates the fact that a company making and processing hundreds of products can operate one phase of its purchasing department on a centralized basis and another on a decentralized but cooperative basis. The purchasing is centralized in the main office in New York City. The scrap and salvage disposal is decentralized among executives in the New York Office, at the New York City plant, and at the Bayonne, New Jersey, plant.

## Salvaging Containers

Drums, flasks and other containers in which essential oils and other goods are received are an example.

Back in the 1880's the company pioneered the modern steel drum. Oils were being received in 21-ounce wine bottles and in such other containers as native labor in the Orient could fabricate. To cut down shipping costs, the company produced 120-gallon steel drums weighing from 90 to 100 pounds each, shipped them out empty, got them back filled. They were "built

like a battleship" and were capable of continuous re-use.

These have of course been replaced by the modern re-use shipper weighing only 55 pounds and the single trip shipper weighing 50 pounds. But in spite of this all sorts of odd containers continue to come in.

France, for example, exports some of her products in 220-gallon steel drums which are built strongly enough so they could be converted into low pressure steam boilers. These huge drums are not known to have any immediate market in the U. S., but the company department which receives one notifies all other departments of its availability. Somewhere along the dozens of processing lines for liquids, some one is certain to need a good husky tank or vat. The drum then goes into service, with a resultant saving of original equipment costs.

Aluminum flasks from abroad may be more than twice the size of the largest ones made in the United States. These also may have high values, both for intra-company use and as process flasks in the hands of customers. The flasks therefore are sent out as returnable containers. The executive in charge of selling the products they contain puts on them a price which is slightly in excess of their value. If the flasks come back they are welcome; if not, then they have been sold as a product and at a slight profit.

Incoming containers lined with copper come directly within the cognizance of the purchasing department, to be sold for their copper values. A container of 25 pounds capacity, for example, may contain as much as  $2\frac{1}{2}$  pounds of copper. The purchasing de-

partment stores the containers until the quantity on hand is of interest to a scrap dealer and the copper market is favorable, then sells.

Considerable proportions of the oils imported from the Orient come in ordinary 5-gallon oil cans bearing the labels of every large petroleum company in the world. These cans, together with the ordinary single shipper 50 gallon steel drums received, are sold by the purchasing department through the common scrap yard trade channels.

#### **By-Products from Waste**

Process wastes are a series of problems each of which is peculiar to itself.

The company has an extensive research laboratory and is continually developing new by-products. For example, pyrethrum products are extracted at this plant and are sold to another division of the company which further processes them into insecticides. The exhausted dry pyrethrum material has a natural affinity for the insecticide and can be sold to the same outlets for use as a base for dusting type insecticides.

A standardized waste material like that involves the purchasing department very little. But trouble arises when the research department of a customer develops a new specification for the primary product and thus changes the nature of the waste which will be left after the main product has been removed.

Here the company sales commitments may be such that the purchasing department will have to go into the market and procure the types of waste which can be made into the wanted by-products.

The possibility that this may happen causes the purchasing department to be continuously informed of all by-products sales developments. The

surest way to be sure that the materials can be procured on a basis allowing profitable operation is to give the purchasing department the longest possible warning of impending developments.

#### **Cooperation with Sales**

Coupled with this is the possibility that the demand for a by-product may exceed the company production. When this happens, the purchasing department must go on the market and procure enough of some other company's waste materials, or of any other needed materials, to permit processing in quantity to fill the orders. The company usually sells a great many items to each customer and cannot disappoint one if it expects to sell the others.

Consultation between purchasing, production and sales is important in the planning of the sales of such a product. In many instances the need to purchase additional materials can be foreseen, in many others the possibility can be regarded as at least a calculable risk. Original sales prices then can be calculated to include factors for the costs of additional materials bought outside and the ultimate profitability of the product thus can be assured.

Some by-products are profitable when the labor market affords the manpower for making them and when raw material costs and other factors are favorable, but are unprofitable at other times. Here the purchasing department must be informed so that it can buy when the other factors are favorable, but also must notify sales and other departments to slow down on marketing and production when factors within the purview of purchasing look unfavorable.

The purchasing department therefore has to be thoroughly aware of the marketing and production situa-

tions of dozens of individual products.

The existence of salable by-products and even of containers sometimes will help to get scarce raw materials. This was more true during the war when, for example, burlap bags were the purchasing ammunition which captured a shipment of red peppers. But such opportunities are not unknown even in today's readier supply markets.

#### **Miscellaneous Salvage**

Machinery and similar plant scrap and salvage is largely in the hands of the mechanical engineering department. The reason is that the demands for new products and for equipment to make them are highly diverse, and quite a bit of discarded mechanical equipment can be cut, welded, riveted, or otherwise fabricated into new and special purpose equipment which would be difficult to obtain on the open market today. A plant making special products which may be in lots of as little as forty gallons and ordered only once in four years is a severe challenge to the ingenuity of its mechanical engineers.

Ordinary scrap such as burlap and discarded steel is sold to a scrap dealer. The purchasing department has found it profitable to maintain continuous relations with a limited number of dealers who can be trusted to advise it regarding markets, take the scrap whenever ready, and pay the current market at that time.

The plant is not large as compared to some of the chemicals process factories, nor is it so small that any one man can keep his finger on all operations. The entire scrap and salvage setup then is a demonstration of operating effectivenesses and profits achieved and assured by continuous cooperation between purchase engineering and other executive functions.

Varied equipment used in processing liquids is a challenge to salvage ingenuity.

Containers represent a typical opportunity for effective salvage policies.



# Southeastern Purchasing Agents Convene at New Orleans



Stanley L. Mayo  
General Conference Chairman

WITH a registered attendance of more than 400 members and guests, the fifth annual conference of Purchasing Agents of the Southeast, sponsored by the eight Associations comprising District No. 7, N.A.P.A., was an unqualified success. The meeting was held at the Roosevelt Hotel, New Orleans, on October 18th and 19th. The program, built around the general theme of "Progress in Purchasing through Education", presented a comprehensive and diversified discussion of economic and professional topics of timely importance to purchasing men, with particular emphasis on conditions in the rapidly growing industrial South. The speakers included nationally known leaders in the purchasing field. The auxiliary activities, including plant visits and recreation, rounded out an interesting and well balanced conference program.

Stanley L. Mayo of the Freeport Sulphur Company, New Orleans, General Chairman of the Conference Committee, called the meeting to order on Monday morning. Delegates were welcomed to New Orleans by Lionel Ott, Commissioner of Finance in the City Council, and James J.

Fifth annual District Conference upholds high standards of previous meetings.

Program covers economic problems and professional progress in purchasing.

Growth of district associations reflects growth of the industrial South.

Morse of the New Orleans Public Service Company, President of the host Association.

G. W. Leep of the Mississippi Association presided at the morning session, introducing the first three speakers: Thurman Sensing, Director of Research for the Southern States Industrial Council, "The Industrial South and its Opportunities for Purchasing Executives"; Ralph O. Keefer, President of the National Association of Purchasing Agents, "Our Professional Obligations"; and Howard T. Lewis, Professor of Purchasing at Harvard University Graduate School of Business Administration, "Where Do We Go from Here?" These addresses are reported in the following section.

George L. Wilson of the Alabama Association presided at the Monday afternoon session. Speakers at this meeting included: Robert W. Elsasser, Management Consultant, Instructor at Tulane University, and special consultant to the New Orleans Association, "The Politics of Price Structure"; and George Stuart Brady, Director of the Industrial Materials Service and Consultant to the Federal Bureau of Supply, Washington, D.C., "The Supply Outlook for Strategic Materials".

#### Educational Program

At this session, Wilson B. Wight of the Bausch & Lomb Optical Company, Rochester, N. Y., representing the National Committee on Education, outlined the organization and activities of that Committee, which is making available a diversified and coordinated "educational package" for the benefit of the membership. He particularly urged participation in the "How to Buy" program to develop

export and practical commodity information. He stressed the need for a continuing program of education to keep abreast of changing conditions, and drew a parallel between the professional status of purchasing in this country and in Great Britain, where educational standards and facilities have been developed under the auspices of the Purchasing Officers Association.

District Vice President T. A. Corcoran of Louisville traced the growth of the district, reflecting the increasing industrial importance of the Southeastern States, and keeping pace with the growth of the Association on a national scale.

At the conclusion of this session, Emile L. Morvant of Southdown Sugars, Inc., served as moderator for a question and answer forum. The panel was made up of the day's speakers, who were subjected to a barrage of questions from the floor, suggested by the earlier discussions.

The banquet on Monday evening was preceded by a get-together cocktail party in the Gold Room, the New Orleans Association being hosts for this occasion and demonstrating southern hospitality at its best. Fred E. Lind of the Louisiana Coca-Cola Bottling Company was master of ceremonies at the banquet, introducing as speaker of the evening, Clayton Rand, editor and philosopher, of Gulfport, Mississippi.

The business of the conference was resumed on Tuesday morning. Presiding officer at this session was J. R. Carmichael, President of the Georgia Association. Speakers included: Stuart F. Heinritz, Editor of PURCHASING Magazine, "This Business of Purchasing"; R. J. Stakelum, General Manager of Sales, Tennessee

Coal, Iron and Railroad Company, "The Basing Point Decision and Its Effects on Southern Industries"; and George A. Renard, Executive Secretary of the National Association of Purchasing Agents, "From One P. A. to Another".

#### District Activities

Harlan E. Cross of Sloss-Sheffield Steel & Iron Company, Birmingham, Chairman of the District Activities Committee, outlined the accomplishments of this group, which has been an effective and constructive coordinating force in the work of District No. 7. Projects currently under consideration include the establishment of a speakers bureau to serve local Association meetings, the compilation of a directory of manufacturers in the southeastern territory, and the possibility of issuing an Association publication on a district-wide basis rather than maintaining several local publications as at the present time.

The announcement that Mr. Cross had been prevailed upon to continue as Chairman of the Activities Committee for one more year was greeted with enthusiastic applause, a tribute to the splendid leadership and unstinting effort that he has contributed to this work over the past several years, ever since the inception of the Committee. E. E. McCulley of Louisville will serve as Co-Chairman.

The 1949 District Conference will be held at the Seminole Hotel, Jacksonville, Florida.

After the presentation of the Resolutions Committee report, by Chairman Jerry Watson of St. Petersburg, the formal meetings of the conference

were adjourned.

Tuesday afternoon was given over to a variety of activities. For those so minded, a plant visit trip had been arranged at the American Sugar Refinery, largest plant of its kind in the South, and to New Orleans' famous International Trade Mart. The annual golf tournament, with inter-Association team play for the Louisville Trophy, was held at the Metairie Country Club. Another attraction was a boat trip on the Mississippi, covering the facilities of the Port of New Orleans, second largest port of the United States.

The Ladies' Entertainment program likewise included a boat ride, luncheon at Arnaud's, a tour of the Old French Quarter, and shopping time.

The District Council meeting had been held on Sunday, immediately preceding the conference. Members of the District Council and of the District Activities Committee were dinner guests of the New Orleans Association officers at International House, Tuesday evening.

#### Committees

Committees in charge of the conference were as follows:

*General Conference Committee.* Stanley L. Mayo, Freeport Sulphur Company, Chairman; Robert N. Dowling, New Orleans Public Service, Inc., Vice Chairman.

*Banquet and Entertainment.* Theo. H. Harvey, Theo H. Harvey Press, Chairman; E. A. Schlesinger, Jr., Gulf Engineering Company, Vice Chairman.

*Finance.* Arthur Haas, Madison

Lumber Company, Chairman; G. A. Lyncker, American Sheet Metal Works, Vice Chairman.

*Golf.* P. H. Dillon, P. H. Dillon Company, Chairman; George Gabler, Eagle Asbestos & Packing Company, Vice Chairman.

*Hotel.* Thomas Born, Freeport Sulphur Company, Chairman; W. Klarquist, The California Company, Vice Chairman.

*Ladies' Entertainment.* George Gabler, Chairman; E. L. Salzer, Mississippi Shipping Company, Vice Chairman.

*Plant Visitation.* N. J. Gubler, Johns-Manville Products Corp., Chairman; Vic Purdy, Southern Pacific Railroad Company, Vice Chairman.

*Program.* James J. Morse, New Orleans Public Service, Inc., Chairman; Fred E. Lind, Louisiana Coca-Cola Bottling Company, Ltd., Vice Chairman.

*Publicity.* John Dastugue, Times-Picayune Publishing Company, Chairman; J. A. Fitzgerald, C. T. Patterson Company, Vice Chairman.

*Reception.* Walter Eagan, American Canvas Products Company, Chairman; George Gabler, Vice Chairman.

*Registration.* Robert N. Dowling, Chairman; Walter E. Temento, International Lubricant Corp., Vice Chairman.

*Resolutions.* Jerry L. Watson, Florida Power Corp., St. Petersburg, Florida; W. S. Rier, Rotary Lift Company, Memphis, Tennessee; E. E. McCulley, Courier-Journal Job Printing Company, Louisville, Kentucky.

Abstracts of leading papers presented at the New Orleans District Conference

# The Meat of the Meeting

## Industrial Opportunity in the South

By Thurman Sensing

Director of Research  
Southern States Industrial Council  
Nashville

THE story of industrial development in the southern states over the past eighty years has been the slow process of rebuilding capital. With approximately one-third of the nation's population, the South prior to 1860 had 39% of the nation's

wealth, but in 1870 it had only 14% of the wealth. The road back has been a long one.

The industrial destiny of the South, however, is sure. In this area there is every necessary factor — climate, soil, diversity of natural resources,

water power, port facilities. In the coming "Chemical Age" which is now dawning, the South is particularly rich in mineral deposits, oil, and a variety of agricultural products suitable as raw materials for chemical development. Great progress has been made in deriving a wide range of products from such characteristic crops as Southern pine, peanuts, sweet potatoes, ramie, and tung oil. With the growth of world trade, and especially looking toward South America, the South will have an increasingly important role. The southern ports of New Orleans, Baltimore,

Norfolk, and Mobile today rank among the nation's six busiest ports in terms of total tonnage handled, and in value of exports and imports.

Another factor of great significance is that a tremendous potential market exists right at home, for the southern

states have long been importers of manufactured goods for consumption. An unusually large proportion of new production could be absorbed in this area itself.

Beyond this wealth of material resources, the South has tremendous

resources of ideals and principles. Its characteristic leadership in upholding the principle of State Rights reflects the temper and independence of its people. It stands as a stronghold of true democracy and free enterprise, dedicated to the ideal of freedom.

## Our Professional Obligations

By Ralph O. Keefer

President of the National Association  
of Purchasing Agents

**N**O ONE person can possibly know enough, through his own efforts, to be a complete and competent purchasing man. In addition to the knowledge of the many materials he is called upon to buy, and of the markets in which they are bought and sold, he must have an understanding of the natural economic laws, and he must watch man-made laws that affect the economic situation; then he must apply his intelligence to dealing with current conditions and trends in the light of all these factors. But the combined knowledge of nearly 12,000 purchasing men, in all types of industry and in all parts of the country, working in and through their Association and its committees, is blended into the effective profession of purchasing.

The purchasing agent has an obligation to his company, to perform his

buying duties well and to contribute to the planning ahead that is the function of all management.

He has an obligation to his profession, in building up the quality of purchasing personnel to cope with current business problems and to prepare for the troublesome times ahead.

He has a public obligation. The notable services rendered by purchasing men in various governmental agencies during the war is well known. Purchasing men have been active and effective in promoting better business and purchasing methods for government on both the national and local level. The participation of practical purchasing agents in the work of the "Hoover Commission", looking toward the reorganization of the executive departments of the Federal government, is another notable contribution. The domestic stockpiling



Robert N. Dowling  
Vice Chairman  
Conference Committee

program and the world-wide program of ECA also call for expert purchasing assistance.

The purchasing agent has an obligation to be articulate in support of the free enterprise system, which our experience has shown to be the best for the greatest number of people.

## Where Do We Go From Here?

By Howard T. Lewis

Professor of Marketing  
Harvard University

**T**HE two questions uppermost in everyone's mind today are: Will we have a war with Russia? What's ahead for business?

Communism being what it is, there is no basis of cooperation between Russia and the United States. It is inherent in the communistic doctrine that the rest of the world must be converted to that system. There are just two ways to stop this. We must help to get Western Europe on its feet economically, and we must be prepared to use military force if necessary. It will probably not be necessary, if we demonstrate that we have that force.

Any effective program to accomplish these ends is bound to be costly. The Federal budget, amounting to more than \$37 billion in 1948 and increasing for 1949, reflects the cost of war, the effects of war, and the efforts to prevent a future war. Armament, stockpiling, and the military establishment must be financed.

We should give close study to the national budget, which is now \$8 billion more than in the '30s and twice as great as in the '20s. All disastrous inflation starts with poorly balanced budgets. The Federal government is now a senior partner in almost every American business. Government ex-

penditures, which represented 5% of total national income in 1920, and 10% before the war, now amount to 20% of national income. Business must be good to support such a situation. Business must be strong enough to meet any domestic crisis.

On the surface, business looks good, but the outlook is not healthy. Analysis of the business indicators shows a downward trend in many of the significant factors. The inflationary boom is about over. We must face the fact that any prosperity that depends primarily on governmental support and expenditures is unsound. When supply, demand, and prices are fundamentally out of line, it is not a case for the measures of expediency and support. The only sound basis for a strong America and a strong world is the production, distribution, and consumption of goods for a world at peace.

## The Politics of Price Structure

By Robert W. Elsasser  
Management Consultant  
New Orleans

POLITICAL action is group action. Competition for the dollar today is group competition, rather than between individual companies. It is competition between industries, between regions, and between industry and government. In a competitive economy, only one price can prevail, yet this situation has been accepted as evidence of collusion and restraint of trade. A fundamental question today is whether controls shall extend to equalization, which is a political concept.

Watch for the coining of new words that mean the same thing but avoid stigma and public suspicion. We may have a cry for selective price control

if the price structure is upset by government spending. Money and credit can be managed and have been managed, though the results are but incompletely known. There is always pressure for group interests, even though it is sometimes inconsistent. Right now we see groups pleading for government contracts, while at the same time they are complaining about government spending.

The competition between government and industry is exceedingly important, not only as it affects the current situation but in its long range implications affecting our whole economic system. The public debt 20 years ago was equivalent to about

one-third of national income; today it stands at 19% of income. Taxes formerly amounted to 5% of income; today they take about 25% of income.

Mass approval (political action) supports such government programs as rearmament, social security benefits, aid to Western Europe. The government has a moral obligation to reveal the true costs of such programs and services, in order to merit public approval and support. Taxes are a cost. Inflation is a direct form of taxation.

An informed public opinion is essential to wise political action regarding the economic and price structure. The public interest must support any controls affecting mass production, mass distribution or cartelization, and benefits logically resulting from public control as opposed to wasteful competition. There is danger in the growth of emotional influences regarding such questions.

## Supply of Strategic Materials

By George Stuart Brady  
Industrial Materials Service  
Washington, D. C.

THERE are about thirty strategic materials so important to our national and economic security that we must keep stocks available and keep the shipping lanes open for a continuing supply. The critical nature of this situation is emphasized by the fact that one-fifth of the world's land area, with its natural resources, is behind the iron curtain, and another one-fifth is on the fringe. Our situation in respect to these materials is still considerably short of security, but it has improved immensely since the war scare of last March.

Many of the shortages are due to narrow social vision on the part of individuals, of industries, and of the government. We could use about twice as much aluminum as we now have the capacity to produce. Along with the direct benefits, it would greatly ease the situation in steel. The future belongs to the light metals. To produce more aluminum, we need more bauxite, an imported ore. There are large undeveloped deposits of bauxite relatively close at hand in Jamaica, that could well be utilized.

Zinc and lead, which are in limited supply, are still being dissipated by continuing old uses, while new and better and less critical materials—such as titanium pigments—are ne-

glected. On the broad front of materials utilization and conservation in the public interest, the captains are asleep.

In 1945, at the conclusion of the

actual emergency of the shooting war, businessmen deserted Washington. The government needs the services and the cooperation of business experts in meeting the problem of over-all materials supply, beyond the consideration of the thirty strategic materials. They must give ear to the public interest in this problem, and must give primary attention to the expansion and development of the raw material resources of the world on a long-range, world-wide scale.

## This Business of Purchasing

By Stuart F. Heinritz  
Editor, PURCHASING Magazine

PURCHASING men are themselves writing the definition of their function in their daily activity and accomplishment. We are fortunate that purchasing has not yet been typed or catalogued in a fixed job definition, for our profession is still in the developmental stage. We are not ready for the pigeonhole. The history of purchasing progress for a quarter century has been the story of leadership by far-sighted, sound thinking and resourceful individuals with a job to do under constantly changing economic and technological conditions, who have been out ahead of their field, developing better and more effective ways of doing their

job, and willing to share their experience with other purchasing men, so that gradually their tested policies and methods are assimilated and become a part of the science and technique of procurement.

The purchasing agent is expected to have a wide and detailed range of knowledge. There is danger in overspecialization, which loses sight of the complete objective. There is danger in spreading ourselves too thin, till knowledge becomes superficial. There is danger in infringing on the proper province of other departments. But while there is great diversity among individual companies as to size, product, materials

used, and nature of the operation, there is one unifying principle in that the particular responsibility of purchasing is to get maximum ultimate value for purchase expenditures.

The classic definition of purchasing responsibility is to get the right quantity, at the right time, at the right price, from the right source. Leadership in purchasing, which gives the clue to the direction of purchasing development, is currently seeking maximum value not only in the "right price," but more fundamentally in determining the "right material."

Dramatic savings are reported from studies that effect cost reduction by initiating changes in material, design, or method, rather than seeking lower prices through negotiation and following market fluctuations. Such instances of cost reduction are of a fundamental and permanent nature.

In its most publicized form, this process is known as purchase analysis. The opinion has been expressed that purchase analysis is two years or more away from general practice as a purchasing technique. The fact is that it is already here, in scores of progressive companies, under a

variety of names—"permanent saving," or simply "cost reduction program."

Who gets the credit? Obviously, any such program must be worked out in cooperation with engineers and production men, and must have their support. In working together, the particular province and contribution of purchasing is the potential cost reduction, resulting in greater ultimate value. The purchasing agent will get whatever share of credit is his due, at the point where it counts—in the estimation of his own colleagues and management.

## The Basing Point of Decision

By R. J. Stakelum

General Manager of Sales  
Tenn. Coal, Iron & R. R. Co., Birmingham

**A**S a result of the Supreme Court decision in the cement case last July, basing point prices in the steel industry, which have been in general use for fifty years, have been abandoned. Prices are now quoted f. o. b. the producing mill.

This decision represents a reversal of formerly accepted interpretations of price legislation. The Clayton and Robinson-Patman Acts deal with price discrimination that tends to lessen competition. Industry has interpreted this in terms of cost to competing customers. The Court now interprets it in terms of net return to the producer. It still permits differences in net return to meet competition, but only in individual cases, not on any systematic basis.

Under the former system, competition between producers resulted in uniform costs to consumers in any given area as a result of the producers' desire to get broad distribution for their product, and industrial plant locations were carefully chosen to benefit from this situation.

Now there is no competition at the consumer's plant, except in a few areas close to concentrated steel production. The effect has been to create a monopoly zone around each producing plant, and higher prices are possible in a monopoly area. The decision does not increase competition between producers; it does make for discrimination between users.

In many areas, demand is less than production. The producer may not wish to go outside this area if it affects his net mill price. Operating at 70% of capacity may bring him a better return than 90% operation at a lower net mill price. Production may

be curtailed in consequence.

In other areas, demand exceeds production. Which of the users shall be forced to buy steel from distant sources, at a higher cost?

All companies and all areas are affected by this decision. The effect on the South's industrial development and expansion is likely to be most serious, not only in steel, but in all lines based on Southern raw materials. Plant location is determined largely by the location of markets and the cost of reaching markets. The greatest concentration of industry and population is in the East and Middle West. When the freight rate is greater on manufactured products than on the raw material, the natural decision will be to locate new plants and expanded facilities closer to the mass markets. The South may be faced with a reversal of recent industrial trends, and revert to the sending of its natural materials to

northern manufacturing areas, closer to the mass markets, for conversion there. Already two leading Southern industries—cast iron pipe and wallboard—have taken steps to establish plants on the Pacific Coast.

Another probable effect concerns our national security. Decentralization of industry is highly desirable from this standpoint, but the new pricing policy encourages centralization of steel fabricating plants close to steel producing units in concentrated areas of population.

In summary, this policy may result in (1) restricted competition; (2) abandonment or relocation of plants; (3) denial of a choice of supply sources to industrial buyers; (4) increased cost to the purchaser, to the extent of transportation costs, and probably increased cost to consumers; (5) greater difficulty in estimating delivered cost of materials; (6) elimination of broad markets for the producer, who can no longer compete in good faith for the business of consumers beyond his immediate trade area; (7) confusion and uncertainties in the marketing of steel; (8) a chaotic situation generally in our national economy.

## From One P. A. to Another

By George A. Renard

Executive Secretary, National Association of Purchasing Agents

**T**HE international situation is bad, and full of uncertainties. Trade associations in many industries are looking ahead in terms of "Alternative Short Term Plans" to cope with a variety of possible economic and business developments. Purchasing agents will do well to follow a similar policy and be prepared for any eventuality.

On the broad business and price front, the choice is not necessarily one of boom or bust. Rather, the alternatives appear to be continued inflation or disinflation. The latter term comes to us from British economists. It describes a situation or process in which inflationary high prices encourage an increase in the

(Please turn to page 298)

**T**HE value of having an assistant or understudy for every key position is so well established as a part of good management practice that it would seem scarcely necessary to argue the point. Whether you are thinking of baseball or the stage, of professions like medicine or the ministry, of jobs in the shop or in business management, the principle is the same. But while we may not have to prove the point that an assistant is desirable, there is considerable to be said about the relationship between a department head and his assistant and staff.

Purchasing is no exception to this rule. In the large organization where the volume of purchasing work is so great as to require a number of buyers, and so varied as to permit or require a degree of specialization among the buyers, the building of an adequate staff is accepted as a part of normal administration of the department. If the company's operations are such that division or branch plant purchasing agents are required, that situation too is handled in regular course. In all such cases, the jurisdiction over items purchased and policies to be observed are clearly defined to avoid duplication and confusion.

#### *Value of An Assistant*

In the smaller company, this is not so obvious. However, since the difference between the big business and the small business is primarily one of volume, and not of the function involved, the same reasoning should apply. The wise purchasing agent, even in a relatively small company, desires an assistant; above all others in the firm, he should not overlook the assistant's value, and he should make the utmost use of it. Frequently the practical answer is to develop a capable assistant from the ranks of the clerical staff, where the necessary routine correspondence, order writing, shipping orders, defective reports, and other "paper work" is handled for the smooth operation of the department and the maintenance of needed records. Quite often, good assistants — and good purchasing agents — are developed from this source. It is probably superfluous to mention that encouragement should be given to this end.

It is a mistake to designate to the assistant only certain pieces or types of work, leaving the so-called more important ones to the purchasing agent himself. Should the purchasing agent find it necessary to be away from his office for a day or for several days, and his assistant not know what had been done on a certain deal which must be closed immediately, mistakes

# The Buyer's Assistant

**Every purchasing agent can do a better job with a competent assistant.**

**Part of executive responsibility is to train an understudy for the job.**

**Cooperation is the first essential for smooth and effective departmental operation.**

•

**By F. J. Schweiss**

and inadequate attention are the result. Both should be familiar with all jobs that are pending and any deals that are in process of completion, not only for contacts outside the company, but to answer any queries from other departments that are concerned with the order.

This cannot be accomplished if the purchasing agent accepts the relationship by acting in the grand manner, keeping information from the assistant, failing to help him, and emphasizing the fact that one is first and one is second. He must remember that they are working together, two persons working toward the common objective of efficient and economical procurement in producing a better and more salable product. Cooperation is a word that flows easily off the tongue, but is not so easy to practice. Yet cooperation is the prime essential.

This doesn't mean that a "yes man" makes the best assistant. There must be harmony, getting along with each other, but one of the greatest advantages of having an assistant is that there are two persons and two minds at work on the purchasing problems. If both agree on everything, obviously you are not getting the contribution that should result from such a relationship. They should complement each other, offering constructive thoughts and maintaining an open mind. The effectiveness of the purchasing office reflects the initiative and the ability of the persons operating it.

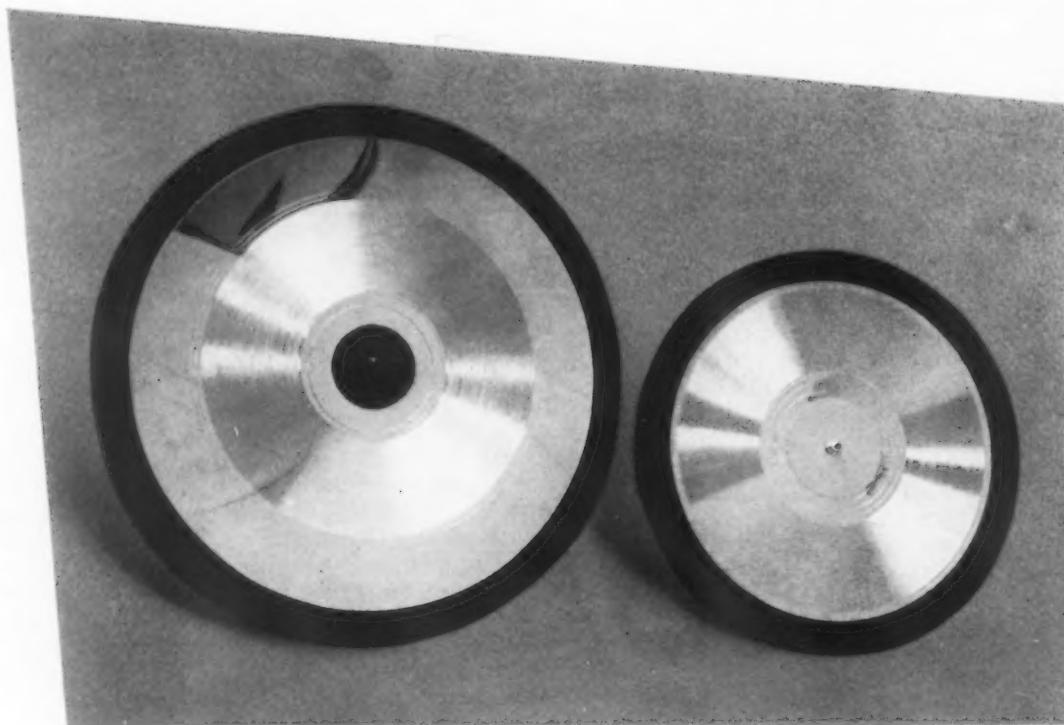
Any purchasing agent who realizes that his assistant should be competent to fill his own place some day, realizes also that the best way of training him is to have the assistant do what he is doing. The assistant working under these conditions, in the presence of the purchasing agent for any length of time, will naturally learn to do the job in the proper way, in accordance

with the policies set up for the department. It seldom happens that a good assistant can be found ready-made. Training is necessary, and the best training results from doing the job and taking on actual responsibilities as fast as the assistant shows the capacity and can acquire the experience.

By the same token, the assistant should know his own value and see the complete picture of his place in the department and what the department is trying to do. With this in mind, he will be quick to learn and to apply what he is learning. At the same time, he must recognize what is implied in the position of an assistant, to be helpful wherever possible and to reinforce the purchasing agent's work. One way of doing this is to take over the responsibilities of office procedures, follow-up, handling acknowledgments, correspondence, and so far as possible handling the requests and inquiries from other members of the organization. He should see to it that the purchasing agent has information regarding the status of orders and any parts of a transaction that have taken place.

As previously stated, the purchasing agent who wishes to make the best use of an assistant should not visit upon him all the dullness or routine of a job he wishes to avoid. At the same time, being relieved of these routine matters, and having confidence that such details are well taken care of, the purchasing agent has the time to become more precise on the larger aspects of his work, to undertake a more thorough job of buying, and to spend more time in training, which includes the sharing of his buying responsibilities. Under such an arrangement, purchasing will never be a dull occupation, either to the purchasing agent or to his assistant.

# Facts on Electroforming



Original application of the electro-forming process—a record master and stamper used in producing phonograph records.

By Benjamin Melnitsky

**Electrolytic deposition of metal has been developed as a useful fabrication process.**

**Exact duplication of matrix surfaces is a basic characteristic of this method.**

**Wide variety of metals can be utilized for a broad range of products and parts.**

ELECTROFORMING, an increasingly important industrial fabrication method, had its origin in the copper electrotypes used for the first time in the printing industries. The next important application for this form of electrodeposition was in the phonograph industry, where for the past 40 years nickel and copper master records have been produced by the electroforming process.

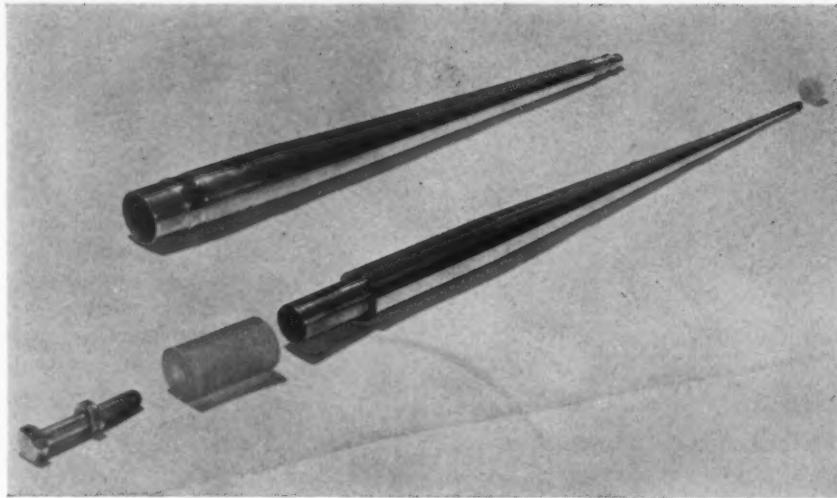
As can be seen, this fabrication method is not new; yet only in the past few years has it been applied generally throughout industry in the manufacture of such consumer and industrial goods as: distilling flasks, manifolds, paint spray masks, pipe couplings, rings, gaskets, stencils,

welding tips, ear pieces for hearing aids, electric transformer cores, jointless radiators, precision telescoping tubing, blast furnace tuyeres, venturi nozzles, marking tools, ornamental replicas, jewelry, detonator tubes, gears, cigarette lighter cases, paint spray masks, fountain pen caps, pattern molds, dies, harmonica cases, parabolic mirrors, computing cams, leather graining plates, slide rules, surface roughness comparators, buttons, paper napkin embossing roles, precision metal screens, and many more.

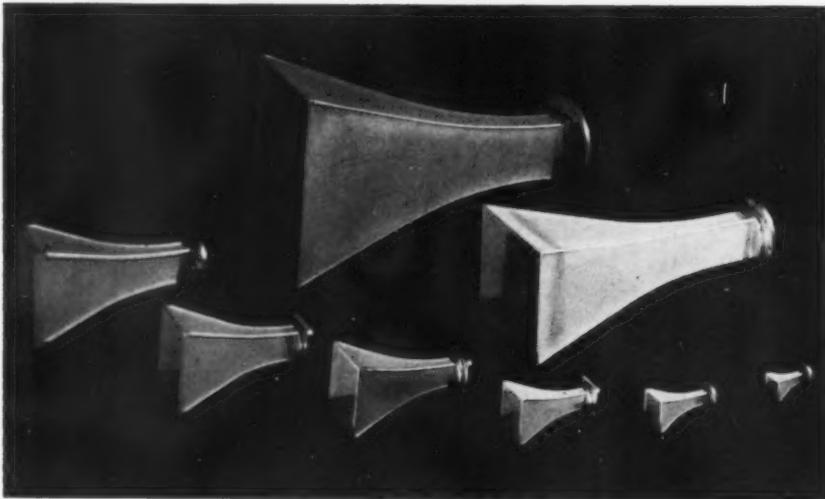
Although broad application for this fabrication method in industry is a relatively new occurrence, progress in this short period of time has been

prodigious. At the present time there are several hundred plants producing electroformed parts valued in excess of \$100 million annually. One plant alone, the Camin Laboratories in New York City, is turning out over 40,000 finished parts weekly.

Electroforming can be described as an outgrowth of electroplating. In common with plating, the electro-forming operation consists of placing an object in the anode end of a bath containing metal in chemical solution. An electric current, passing from cathode to anode, takes the metal out of solution and deposits it on the anode. The differences between the processes lie in the amount of metal deposited and the nature of the anode.



Mandrel of cold drawn steel, stress relieved before machining and finish ground to close dimensional tolerances, for precision forming of the tapered tube shown above.



Microwave horn antennae with intricate contours, accurately produced by electroforming.

Conventional electroplating may deposit as much as 0.02"; whereas, through electroplating, thicknesses of  $\frac{1}{2}$ " can be built up. In the plating operation the primary object is to attain a permanent bond between the deposited metal and the object being plated. Electroforming has an exactly opposite purpose. In this process great pains are taken to insure that the bond is a temporary one.

#### *Advantages of the Method*

The results to be obtained by electroforming are impressive enough to warrant more than casual consideration by purchasing agents. The applications for this fabrication method are, as has been indicated, tremen-

dously wide. The advantages it has to offer industry are many. Some of these are:

(1) Electroforming can be utilized to manufacture parts that can not be made economically by any other method. A good example is radar "plumbing" — wave guides, cavities, elbows, and other hollow parts with twisting, curving, tapering, and flaring cross sections used to carry electromagnetic waves. Were it not for electroforming, these parts could not have been fabricated on the large scale required during the war. Roughness comparators which cost over \$100.00 when machined can be made for 75% less when electroformed. These are blocks of iron with standard metal

Photographs by courtesy of Conforming Matrix Corp., Detroit; Camin Laboratories, New York; Bart Laboratories, Belleville, N. J.; C. O. Jelliff Mfg. Corp., Southport, Conn.; Sperry Gyroscope Co., Great Neck, L. I., N. Y.

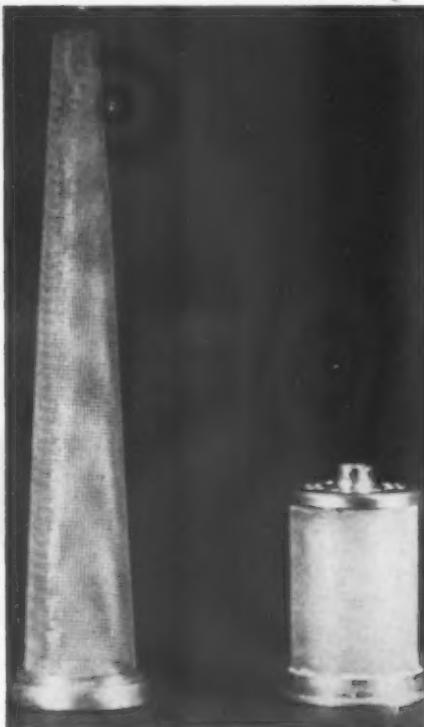
surfaces reproduced from master samples. By running his finger over the sample surface, the machinist can compare it by "feel" with the surface of the part he is turning on his lathe. Differences of 0.006" can be gaged in this manner. No other process, other than electroforming, can produce as good a block at anywhere near the same price. Other examples abound. A fountain pen barrel with its exceptionally long taper can not be drawn, stamped, machined, or fabricated in any other manner except electroforming. Pen caps with tapered, recessed, and undercut ends are also in the same category.

(2) Exceptional surface smoothnesses can be obtained because the electroformed part reproduces almost exactly the surface on which it has been deposited. Thus the radar plumbing, mentioned above, has an inner surface which is as reflective as the finest mirror. In fact, parabolic mirrors of all sizes, ranging from those used on microscopes to those in military spot lights, are electroformed. Leather, alligator skin, and almost all metallic and non-metallic surfaces may be reproduced in finest detail by electroforming. Plastic purses are made to look like alligator skin by being stamped with dies which, in turn, were produced by forming metal on real alligator skin.

(3) Dimensional tolerances of  $\pm 0.0002"$  are produced readily by forming. This is possible because the plated metal forms an exact duplicate of the matrix on which it is deposited. The contours of the matrix are of course readily controlled, the rate of deposition can also be regulated; consequently, there is faithful reproduction to extremely close dimensional tolerances. The phonograph master record is perhaps one of the best examples. The slightest variation in the depth, width, or wave trace on the groove will change a basso profundo to a coloratura soprano, a symphony orchestra to a one man band.

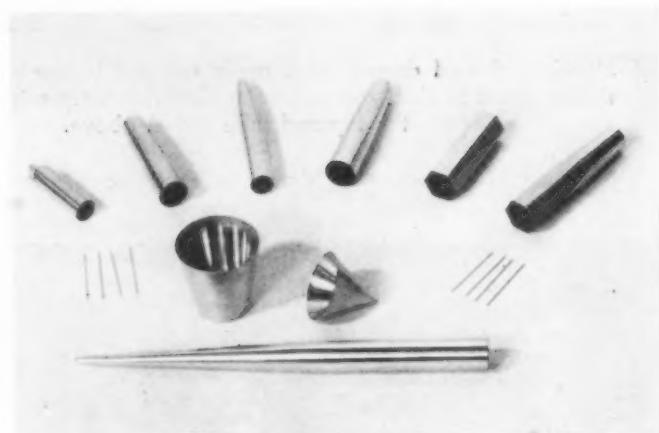
(4) In almost all instances, the electroformed part is completely finished and requires no polishing, grinding, buffing, or similar operations. There are no machine tool marks, no flash, and none of the other irregularities produced by almost all other fabrication methods.

**Electroforming permits manufacture of screens to very close hole-size tolerance, plus or minus 4%.**



Precision resonator of microwave frequency meter, made by electro-forming.

A wide variety of difficult shapes can be produced by electroforming.



Other advantages of this process will be brought out in the following discussion, because not all uses for electroforming can be generalized. Frequently, entirely unexpected attributes are forthcoming. Before proceeding to these, it might be of value to review briefly the process itself, the techniques utilized, and other technical factors that should be considered.

#### *The Basic Process*

In essence, electroforming consists first of preparing a mold, die, matrix, former, mandrel, or any of the other names given to the form on which the metal is to be deposited. This matrix is a negative of the part to be formed. The matrix is then coated with a parting compound or substance which separates it from the subsequently formed shell and precludes the formation of a permanent bond between the two.

The matrix is then connected electrically to form the anode or positive pole and suspended in an electrolytic bath of nickel, iron, copper, or other metals in chemical solution. By electrolysis, the metal is carried to and deposited on the matrix. Rate of dep-

osition varies from 0.001" to 0.1" per hour. The automatic plating process continues until the correct amount of metal has been deposited — usually this takes several days. During this plating cycle, the part may be turned in the bath to insure uniform deposition or the bath itself may be agitated for the same reason. Other than minimal supervision and inspection, little manpower is required once the electroforming process has commenced. When completed, the electroformed matrix is removed from the bath and the newly-formed shell separated from it.

The basic process differs only slightly from electro-plating, in fact the standard plating equipment found in many plants can readily be converted to electroforming work.

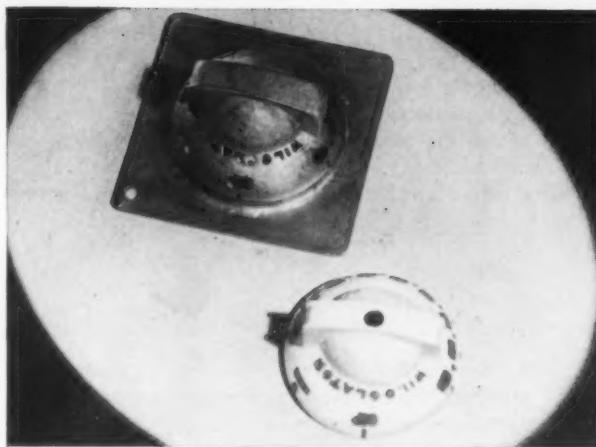
#### *Iron Can Be Used*

As stated above, nickel and copper have been used for many years in the fabrication of electrotypes and master recordings in the phonograph industry. However, the use of iron for the electroforming process is a relatively new development. For that matter, even electroplating of this ferrous metal has been possible on a commer-

cial scale for only a few years.

The conversion of iron into a metal to be electroformed can be traced back to little more than ten years ago. At that time a rubber company was thinking seriously on the cost of making its tire molds. As can be visualized, producing a mold for the ordinary passenger car tire could be a difficult, costly, and time-consuming operation when conventional die-making methods are employed. It was felt that this cost might be reduced if a new process could be developed — one similar to that used in the phonograph industry for making the master record. However, making the master required only a thin sheet of copper to be deposited on the original wax cutting; for tire molds, a shell of  $\frac{1}{4}$  to  $\frac{1}{2}$  inch had to be deposited in the electrolytic bath. A further complication stemmed from the fact that copper did not lend itself to curing of rubber products.

It was necessary to search for a new metal. Iron was decided upon despite the fact that, by ordinary methods, plating with iron was unsatisfactory. About the best results that could be expected at that time were that after a while the bath would



**Electroformed paint mask (copper, nickel plated) for spraying recessed figures of fine detail; over-spray is polished off.**



**Intricate tube assembly involving taper and reduced section, which cannot be made economically by any method other than electroforming.**

give off a brittle deposit of iron. By use of special control, electrolytes, and equipment, plating and also forming with iron were made feasible. From the original limited application, as a means for producing tire molds, electroforming of iron was, during the War, applied far and wide in the production of the radar plumbing mentioned above and a host of other parts.

#### **Making the Matrix**

The procedures followed in making electroforms will vary with the metal being deposited, the nature of the part, and other variables; however, a broad, overall picture of the process can be given at this point. The first — and by far the most important — factor is the matrix onto which the metal is deposited. The matrix can be compared to the foundation of a building. No matter what happens later, no matter how many girders are erected, no matter how well constructed are the various building members, the structure can be no better than its foundation. Precisely the same can be said for the matrix. So it is with justifiable attention to the matrix that electroforming begins.

The choice of matrix material is wide and includes, among others: steel, brass, aluminum, and other metals; plaster of Paris, plastic, rubber, and additional non-metallic materials; lead-bismuth and other fusible metal alloys. The choice of one over the other depends on the nature of the job and the nature of the part to be formed. Obviously a solid steel matrix cannot be used for such parts that are undercut, recessed, circular, or so fashioned that the electroformed shell entraps the underlying matrix. For such electroformed parts, the first type of matrix, the *expendable* variety, is used.

As implied in its designation, an expendable matrix is destroyed once it has served its function. Typical of this class are matrices made of bismuth-lead eutectic, an alloy that melts at temperatures in the neighborhood of 200° F. The matrix is die cast or in some other manner fabricated from the fusible alloy to form the negative impression of the part to be produced. After the forming operation, the matrix, contained in the formed shell, is placed in a bath of boiling oil whose 600° F. temperature quickly melts the bismuth-lead matrix. The molten

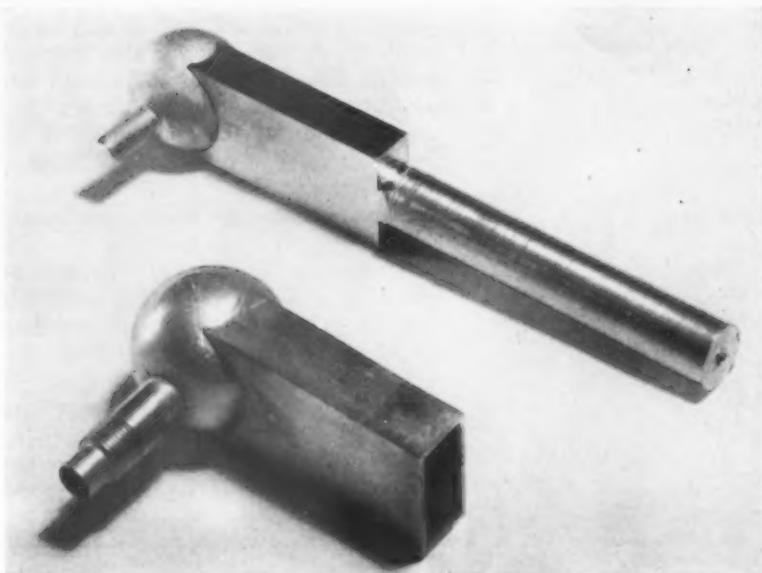
metal is reclaimed and subsequently re-used. A variation of this method entails the use of matrices made from aluminum, zinc, or magnesium which are freed from the formed shell by being dissolved in acid or alkali after the electroforming operation. In addition to the above-mentioned metal alloys, expendable matrices are made from wax, glycerine and gelatin compounds, and other materials which can be drawn off or in some other manner caused to flow out of the formed shell.

Where the formed part is such that it can be withdrawn from the matrix, then is it possible to use a *permanent* or *semi-permanent* matrix. Where low cost, mass produced shapes with simple designs are to be fabricated, a permanent matrix or mandrel made of alloy steel or some other durable metal such as stainless, nickel, etc., is used. Where the quantity to be produced is relatively small, the cost of making a metal mandrel might not be justified. In such event, a semi-permanent matrix is made from plaster of Paris, hard rubber, or some other easily-formed non-metal.

#### **Natural Material Matrix**

A third type of matrix might be termed the *natural material* variety. Here, a piece of fine-grained leather, alligator skin, or other materials whose texture or external appearance is to be reproduced, is placed in the electrolytic bath, after being suitably protected from the chemicals contained therein. The metal is then deposited on the material till a shell of the desired thickness is built up. The electroformed duplicate of the matrix material then serves as a die to duplicate the original texture or design.

No matter what type of matrix is used, there must always be a parting compound between it and the formed metal. This applies to expendable as well as permanent matrices. There are a wide variety of parting compounds in use — all having in common the ability to preclude the formation of a bond between matrix and formed metal. Among the many such compounds are: carbon black, beeswax, solutions of selenium or arsenic salts, collodion or mercury amalgams, potassium bichromate solutions, and many others. Most of these compounds are electrical conductors and, when used with non-metallic matrices, serve an added function of enabling the electric current to pass through the matrix. For some parts, tin or lead is electroplated onto the matrix and then the electroforming operation



Example of expendable mandrel and the part produced—special antenna housing. Since the mandrel cannot be withdrawn after forming, it is made of aluminum and dissolved in NaOH after the part has been formed.

Permanent mandrel in three sections, bolted together during plating, and the part produced—waveguide tee section. The mandrel is coated with tin, which is dissolved by melting so that the mandrel can easily be extracted from the formed shell.

is carried out. The finished part is then heated to above the melting point of the tin or lead in order that the mold might be easily extracted from the formed shell.

The actual plating process is very similar to electroplating with but a few refinements in techniques of handling and processing.

#### Cost Factors

Basically, electroforming — like electroplating and sand casting — is small enterprise. Equipment costs are moderate and highly-paid technicians are not required. The parts during the long forming process require little handling and the work required can be done by semi-skilled labor. The major cost element is usually the matrix. It can readily be seen that if fusible metal matrices are used, the cost for each part would include the expense of fabricating the matrix as well as the cost of the part itself. Since such matrices can be used only once, the cost of the matrix must be included in the cost for each part. If wax is used instead of metal in the formation of the expendable matrix, the cost will be less but still quite large. On the other hand, if steel mandrels and other permanent matrices are required, the cost of their manufacture must be considered.

Despite these unfavorable factors which tend to boost the price of electroforms, there are many instances where electroforming can compete on a price basis with die casting and other fabrication methods. This can be seen from the fact that one manufacturer has produced over one-half million fountain pen caps of electroformed nickel. That almost every photo-

nograph record sold is made from electroformed masters and that all electrolytes are formed by this process is indicative of the practicability of the method. That increasing numbers of dental parts, musical instruments, dies, patterns, and hundreds of other applications are produced by electroforming does attest to the unique value of this fabrication method.

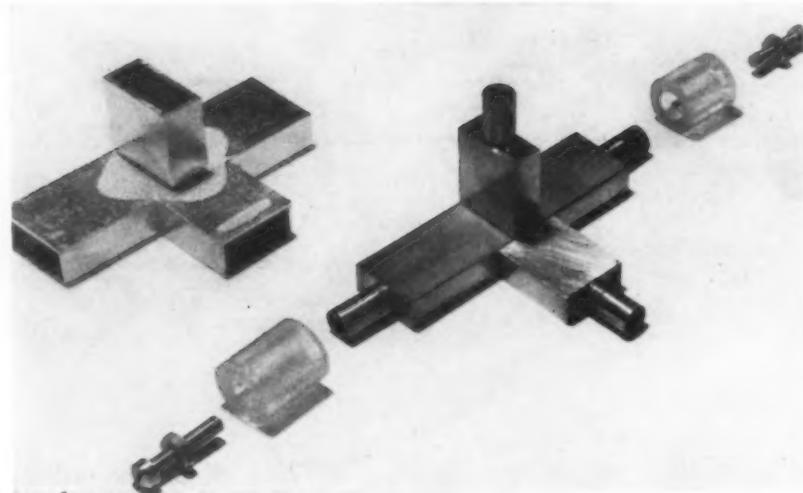
Electroformed parts can be made of copper, nickel, iron, chromium, and other metals; the resultant physical properties of the metal are equal or superior to the same metal were it forged, cast, drawn, or rolled. Electroformed copper, for example, is produced in tensile strengths of as high as 50,000 psi. The deposited metal has unusual density and is not plagued by porosity, an unfortunate propensity to be found in many copper-base alloy castings.

Electroformed iron has been produced with tensile strengths of approximately 50,000 psi., with Brinell

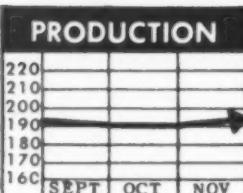
hardness readings of 230-250 and elongation factor of 15% in 2 inches. When fully annealed, the hardness drops to 125-140 Brinell and the elongation almost doubles. Iron parts can be case hardened to a depth of 0.100" to bring their hardnesses up to 16-62 Rockwell C.

Nickel offers an even wider range of physical properties, being as high as 150,000 psi with hardnesses from 28-45 Rockwell C.

Above all else, electroforming offers super-precision with tolerances of  $\pm 0.0002"$  on a commercial, mass-production basis. The combination of good engineering properties, close dimensional tolerances, and flexibility in the nature of products to be produced makes electroforming a valuable fabrication method for almost all industries. Either as an alternate means of production or as a primary production method, this relatively new process has considerable to offer the purchasing agent.



# Where We Stand

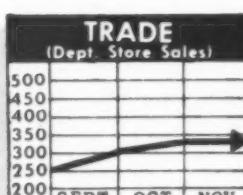


## Today's Business Trends As Reported In Current Statistics

	BASE	LATEST	MONTH AGO	YEAR AGO	% OF CHANGE IN MONTH	% OF CHANGE IN YEAR
Industrial Production Index	1935-39=100	194 (est.)	191	190	+ 1.6	+ 2.1
Steel Production (Weekly)	000 net tons	1,792	1,786	1,696	+ 0.3	+ 5.7
Electric Power Production	mil KWH	5,564	5,482	5,057	+ 1.4	+10.0
Bituminous Coal Production	000 net tons	10,235	11,870	12,894	-13.7	-20.6
Auto, Truck & Bus Output	units	111,740	113,300	101,051	- 1.3	+10.6
Petroleum Output	000 bbls	5,627	5,535	5,240	+ 1.6	+ 7.4
Engineering Construction	000 \$	138,783	142,204	120,145	- 2.4	+15.5



All Commodities (Bur. Labor Statistics)	1926=100	162.7	164.6	157.9	- 1.2	+ 3.0
Semi-Manufactured Articles	1926=100	158.7	158.3	155.2	+ 0.3	+ 2.3
Raw Materials	1926=100	175.1	176.7	175.2	- 0.9	- 0.1
Manufactured Products	1926=100	158.1	160.5	151.0	- 1.5	+ 4.7
Steel Billets, Pittsburgh	gross ton	\$58.24	\$58.24	\$45.00	-	+29.4
Steel Scrap, heavy melting, Pitts.	ton	42.75	42.75	42.50	-	+ 6.2
Copper (Electrolytic)	lb.	.23 1/2	.23 1/2	.21 1/2	-	+ 9.0
Cotton, mid., 15/16"	lb.	.3208	.3215	.3403	- 0.2	- 5.7
Rubber, (Rib-smoked sheets)	lb.	.20 3/8	.22 1/2	.23 1/2	- 9.0	- 8.0
Wheat (No. 2)	bushel	2.53 7/8	2.51	3.21 1/2	+ 1.1	-21.0



Dept. Store Sales Index (Fed. Res.)	1935-39=100	320	336	347	- 4.7	- 7.7
Commercial Failures (Dun & Bradstreet)	no.	104	94	72	+10.6	+44.4
Freight Carloadings	cars	931,750	891,811	940,746	+ 4.5	- 1.0

## FINANCE

Stock Prices (Standard & Poor's)	1926=100	119.1	128.2	122	- 7.0	- 2.4
Bank Clearings (New York) —	mil \$	5,510	5,889	6,327	- 6.4	-19.2
Federal Reserve Credit	mil \$	23,929	23,967	22,689	- 0.1	+ 5.4
Currency In Circulation	mil \$	28,337	28,284	28,709	+ 0.5	- 1.2

# Materials & Markets

## NON-FERROUS METALS

Price declines taking place in other fields show little promise of appearing among non-ferrous metals, as acute shortages continue, the government stockpiling program shows signs of being stepped up rather than slowed, and the tremendous demand grows and grows.

A leading producer boosted the price of zinc 2¢ to 17½¢ a pound at mid-month, and it appeared that price of the metal would be established at that point. Price of the metal has been boosted a total of 7¢ a pound in 1948. Demand is still great, and the recent price increase has led to some fears that price controls may be instituted if the upward trend continues. Meanwhile, Commerce Department officials are studying the possibility of limiting the export of zinc and zinc products so as to build up scarce domestic supplies.

As this was written, conferences between representatives of the copper industry and of the government were continuing, and fears of allocations and price controls resulting from them have been voiced. Government stockpiling, domestic demand, and the strike of railroad workers at the Utah mine of the Kennecott Copper Corporation have made supply tighter than ever.

## PETROLEUM PRODUCTS

The supply of both light and heavy fuel oils continues to improve so consistently that in two months talk has turned from cautious optimism about meeting demand this winter if no emergency arises, to a feeling in some quarters that a surplus may result, particularly if there is mild weather during the coming months. Record domestic production continues and the increased availability of petroleum products outside this country has made possible a considerable reduction of country quotas for the fourth quarter by the Office of International Trade.

During the month a Pennsylvania refiner announced a cut in the price it would pay for crude oil from \$4.49 to \$3.95. The reduction was made, it was said, "because supply exceeds the demand". This is in sharp contrast to the move made by the Phillips Petroleum Company recently in raising by 35¢ a barrel the price it would pay for oil in the Southwest. Although none of the larger refiners has followed suit, it is reported that independent oil producers in the region are trying to get major buyers to raise their prices in the same manner. These opposite tendencies have left the price picture somewhat confused, but trade comment to the effect that further increases now, just as prices seemed to be leveling off, would be unwise for the industry, indicates perhaps that the upward push is the stronger of the two.

## STEEL

Steel production is being maintained at a high rate, and indications are that improved supplies of scrap and iron ore will help to keep it at approximately the same level throughout the winter. Previously there had been some fears that production might have to be curtailed in the face of the scrap shortage. Demand for steel remains heavy, with few indications of falling off in the near future. It is reported that more companies are studying possible changes upward in price for hot-rolled sheet and strip extras.

## CHEMICALS

Demand for alcohol has slacked off considerably over a year ago, and the change has resulted a 3½¢ per gallon cut, the third reduction in a comparatively short space of time . . . Glycerine prices remain relatively stable, and demand continues at a high rate. The new Shell synthetic plant in Texas is in full operation and trade experts are watching closely its effect on the price of natural glycerine. A price movement downward in the face of increased synthetic production is being prophesied in some quarters . . . September production of inorganic chemicals remained stable, according to government figures, with increases noted for synthetic anhydrous ammonia, ammonium nitrate, and hydrochloric, nitric and phosphoric acids. Decreases occurred in the production of calcium carbide, carbon dioxide, chlorine, soda ash, caustic soda and sulphuric acid . . . The alkali supply-demand situation continues in fair balance. One producer recently announced a reduction of 5¢ per 100 lbs. for caustic soda, coming into line with other manufacturers.

## MISCELLANEOUS

For the first time since March, natural crude rubber undersold the domestic manufactured substitute on November 17. On the New York Commodity Exchange on that date, natural sold at nine points below the government's price for general purpose synthetic rubber. Far East production of rubber has been high in recent months, and buying by U.S. and Russia, the two leading consumers has slackened . . . Stocks of bituminous coal in the hands of industrial consumers and retail dealers totaled 67,592,000 net tons on October 1, the greatest bituminous tonnage in stock at the close of any month since October 31, 1945 . . . A record corn crop of more than three and a half billion bushels — 82,000,000 bushels more than was forecast a month ago — has been estimated by the Department of Agriculture for 1948.

## MANUFACTURERS' SALES, INVENTORIES AND NEW ORDERS

	1947			1948		
	Sept.	April	May	June	July	Aug.
<b>Indexes of Value of Manufacturers' Sales (Average Month 1939=100)</b>						
Total Manufacturing.....	325	324	328	336	308	338
Durable Goods.....	342	353	353	369	333	370
Iron, Steel & Prod.	321	325	338	341	301	363
Non-Ferrous Metals and products.	392	415	419	422	350	403
Electrical Machinery and Equipment	410	440	431	452	410	424
Machinery, exc. elec.	324	350	356	381	317	337
Automobiles & Equip.	399	413	401	433	438	461
Transportation equip. except autos.	483	486	486	540	457	494
Furniture and finished lumber products.	286	256	248	264	226	260
Stone, clay & glass products.	249	274	263	273	267	283
Other durable goods.....	270	255	261	262	248	290
Nondurable goods.....	315	307	314	317	294	320
Food & Kindred prod.	332	299	321	326	310	305
Textile-mill products (exc. apparel)	312	333	327	340	269	336
Leather & products.	288	266	240	245	256	311
Paper & allied prod.	312	332	338	330	301	344
Chemicals & allied prod.	329	334	327	320	292	328
Petroleum & coal prod.	269	318	337	329	337	335
Rubber products.....	346	312	317	342	339	354
Other nondurable goods.....	239	225	233	249	243	266
	336	326	313	316	254	344
<b>Indexes of Book Value of Manufacturers' Inventories (Average Month 1939=100)</b>						
Total Manufacturing.....	252	271	274	277	281	283
Durable Goods.....	272	284	286	288	290	292
Iron, Steel & Products.	200	206	213	218	226	230
Nonferrous metals & products.	259	262	262	263	271	279
Electrical mach. & equip.	375	388	394	397	398	399
Machinery, except elec.	277	297	297	299	298	299
Automobiles & equipment.	451	472	479	476	475	473
Transportation equipment, except autos.	634	632	630	625	635	625
Furniture & finished lumber products.	211	255	259	260	259	261
Stone, clay & glass products.	157	163	161	159	159	172
Other durable goods.....	204	204	189	189	183	183
Nondurable goods.....	235	261	264	268	274	276
Food & kindred products.	220	236	229	227	237	234
Textile Mill products (excl. apparel)	220	253	256	256	261	261
Leather & products.	198	241	251	262	264	255
Paper & allied products.	260	276	287	292	305	310
Chemicals & allied products.	256	285	286	284	284	285
Petroleum & coal products.	171	186	194	200	207	219
Rubber products.....	246	293	296	295	289	287
Other nondurable goods.....	216	229	225	227	229	241
	288	332	348	375	405	405
<b>Indexes of Manufacturers' New Orders (Average Month 1939=100)</b>						
All Industries.....	260	252	244	265	246	259
Durable Goods.....	292	292	267	307	291	315
Nondurable goods.....	240	228	230	240	219	225

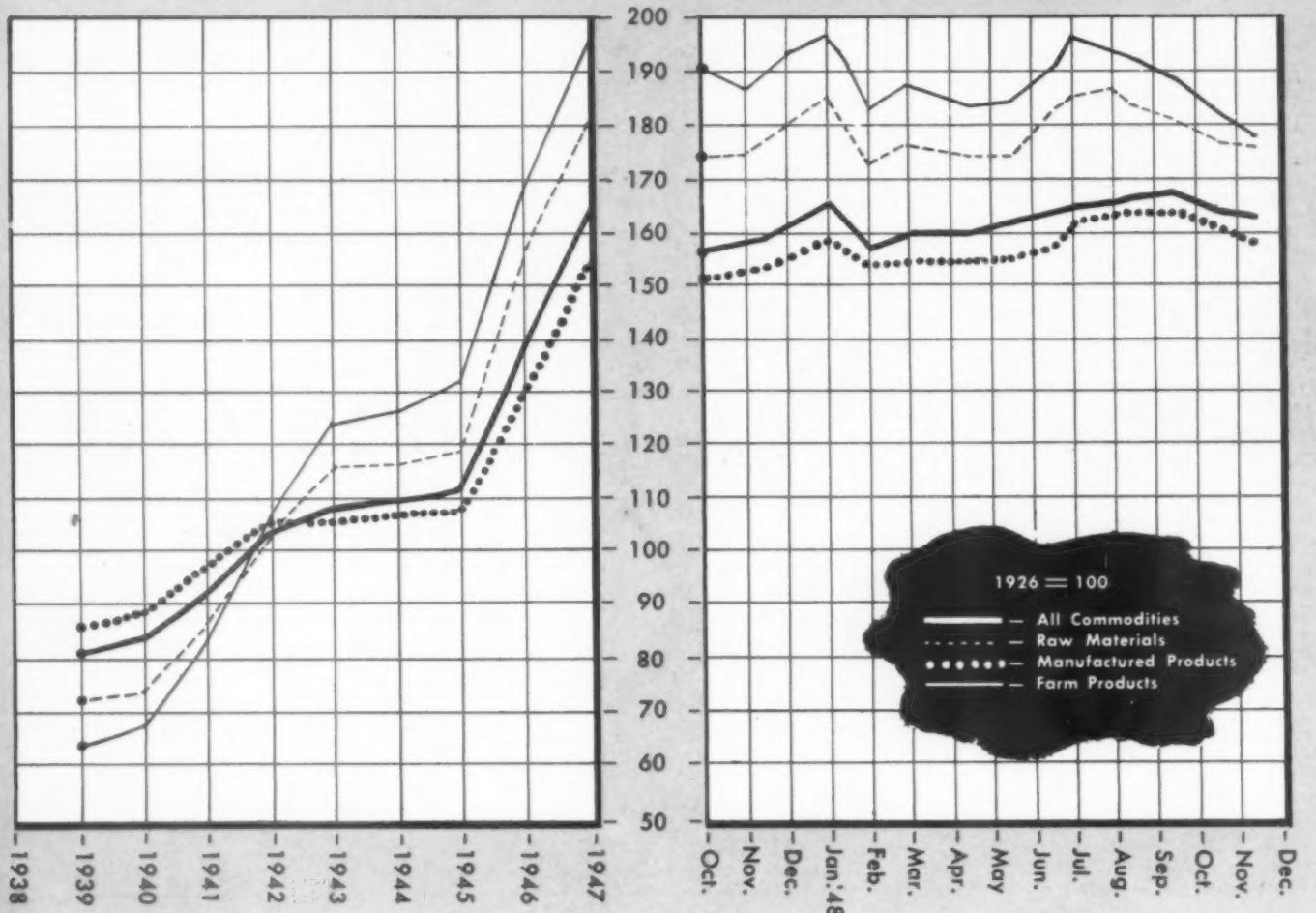
Source — Department of Commerce, Revised Series

\*Estimated

## SALES, INVENTORIES AND INDUSTRIAL PRODUCTION



## The Price Picture



## Straws in the Trade Wind

American Iron & Steel Institute has predicted that consumption of purchased or open-market iron and steel scrap in the United States will establish a new high this year, approximately 15% above the former record of 26,000,000 tons set in 1947 . . . U.S. Steel Corporation is studying the possibilities of obtaining from Brazil 40% of the 500,000 tons of manganese which the company uses annually.

Pittsburgh Consolidation Co. has opened its pilot plant for coal gasification in Library, Pa. The plant was designed and built in co-operation with the Standard Oil Development Co. Immediate value of the project is to prepare a source for liquid fuel in the event of an emergency or shortage.

American Gas Association has developed a process whereby manufactured gas using cheaper grades of oil as the sole fuels can be made at savings of 30% in fuel cost and an increase of 35% in thermal capacity of the apparatus used.

Capital expenditures of \$520,000,000 in the five-year period 1948-53 will be made by Arabian American Oil Co. and Trans-Arabian Pipe Line Co. to expand operations in the Middle East. An Aramco official said that present production of 450,000 barrels a day by the company is expected to reach a 700,000 barrels a day average by 1951, increasing the supply for Europe and aiding the building up of American reserves.

Latin America has been described by K. S. Markley, Dept. of Agriculture, as a promising source of strategic palm oils widely used in American industry. Native palm trees produce the oils, and coconut palms, now grown in the South Pacific and the Orient, are adaptable to this hemisphere, he said.

Personal income was unchanged in September at the level of \$24,600,000,000 level reached in August, according to the Department of Commerce.

# Purchasing Patterns • By G. L. Hartmann

Vice President, The Milwaukee Flush Valve Company



Putting the finishing touches on an aluminum pattern, using elliptical filing cutter. (Photo by courtesy of R. G. Haskins Co., Chicago)



Drawing the pattern out of the mold for a large casting. (Photo by courtesy of United States Steel Corp., Chicago)

THE field of pattern making is so vast that volumes could be written on the subject if all its phases and ramifications were to be discussed. In this article, we are concerned only with the basic considerations that arise when a purchasing agent buys patterns.

At the outset, there are certain conditions that make for a better understanding between the buyer and the seller. It is obvious that if blueprints of a product are submitted to several pattern makers for quotation without also submitting specifications for the construction of the pattern, none of the pattern makers will be on common ground. Therefore, they will quote on pattern equipment varying widely in quality as well as in suitability for the purpose intended. Prices quoted will vary all over the map. Most important, the buyer does not know what he will get until the pattern is delivered, and then it may be too late to do anything about it.

I have followed the principle of putting in writing exactly what the pattern maker is expected to furnish. This serves as a basis for inspection, and eventually builds up a standardized program of pattern construction best suited to the needs of the company and the needs of the foundry producing the castings.

In the preparation of specifications, it frequently becomes necessary to confer with the designer. It may

**Foundry equipment and layout determine the type of pattern best suited to the job.**

**The buyer must be a coordinator between the designer, pattern maker, and foundryman.**

**Pattern specifications insure getting what you need and make for standard practice.**

not be judicious for a member of one profession to throw stones at the glass house of another profession, but that is precisely what I am doing when I say that many designing engineers do not have a sufficient working knowledge of pattern construction and foundry practice which is essential in arriving at a design which is practical and can be produced on an economical basis. On the other hand, it is unfair to expect that a designing engineer shall also be an expert in pattern making, foundry practice, tool making, machining, assembling, and testing. Most designers, if properly approached, are willing to make changes if such changes will simplify construction, molding, or any of the subsequent operations, and providing that such changes are not of major proportions.

Complicated designs require consultation with the pattern maker because there are many ways in which a pattern may be constructed that

may cause trouble for the foundryman, and there are relatively few methods which lead to good pattern construction and sound foundry practice.

Even after the buyer, engineer, and pattern maker agree on a procedure, the foundryman may throw a monkey wrench into the machinery by asking to have the pattern rebuilt to suit his own conditions, and sometimes, unfortunately, merely to prove that a pattern is utterly useless unless it is made his way.

We recognize that most foundrymen are rugged individualists, and that they want patterns made the way they want them. We must also recognize the fact that many foundries do have a plant layout, type of equipment, and special experience, which dictate the type and construction of patterns best suited to their conditions.

It is common sense to recognize these conditions and consult with the

foundry before the pattern is constructed. The whole thing boils down to this: if the buyer will write his specifications in cooperation with the designing engineer to eliminate troublesome features or add improvements, and if he will consult with the pattern maker and the foundryman to arrive at workable pattern equipment, he will have passed his first hurdle.

The next step is to submit such specifications to reputable pattern makers for quotations, inviting only such pattern makers to bid who are able to produce a suitable pattern and to whom he would be willing to let the contract. It is unfair to allow a pattern maker to spend time and money preparing a bid if he is not to be given full consideration in awarding the job. This does not build confidence. In the buying of patterns, confidence and trust must be developed. There are too many ways in which short-cuts or cheap construction may be concealed under a coat of shellac.

Probably the simplest of all patterns is the tool pattern, or patterns required for experimental parts. As a rule, such patterns are built as cheaply as possible because only one casting is required and the pattern may then be discarded. Usually the tool designer simplifies the design to eliminate pockets which require coring, small holes are cast solid, straight lines are used wherever possible to simplify parting lines, and other economies are made which will help reduce the cost.

Specifications for such a pattern are comparatively simple. The blueprint is marked in colored pencil specifying the parting line, indicating the part to be made in the drag, finish to be allowed on machined

surfaces, etc. A specification sheet describes the class of pattern desired, such as white pine, whether glued or nailed, whether bosses and core prints are to be glued, nailed, or set in, the type of fillets (if any), the type of finish (usually one coat of shellac), the numbering and lettering required, and other pertinent facts which allow the pattern maker to quote intelligently. If more than one quotation is desired, all pattern makers will be able to quote according to the same specifications.

The next step up is a wood pattern for relatively small quantities required intermittently. Loose or mounted patterns must be made strong enough and sound enough to withstand fairly rough usage in the foundry and probably long storage in the pattern vault. Pattern finishes are important to avoid early deterioration. When larger quantities are ordered at one time, such equipment may well be mounted on a board if the casting can be made in the drag, or mounted on cope and drag boards if the pattern is large and production warrants such construction. If there is a possibility of excessive wear on some surfaces, such surfaces may be lined with metal. In general, the specifications are more detailed and more exacting as the design becomes more complicated. The ultimate is reached in automotive patterns, where combination hardwood and metal or all-metal patterns are used.

Special designs frequently are an adaptation of a standard design which allows the use of standard patterns with slight changes such as loose pieces added either to the pattern or core box or both, possibly a new core box with the standard pattern, or the use of inserts to increase the total length of a pattern. Such procedures

require careful descriptions of the work to be done as well as the proper marking of the component parts of the pattern, so that the foundryman may produce the pattern without resorting to jigsaw puzzle methods.

Some manufacturers require very large quantities of small castings. Gated patterns are used to some extent, but patterns mounted on a plate or cast plates are most popular. This is a field of its own and requires a technique somewhat different than wood patterns. The procedure varies considerably. Here it becomes necessary and desirable to issue specifications for the master pattern, master core box, and master drier pattern, covering shrinkage, allowance for finish, size of plate, location on plate, number of patterns on the plate, layout of runners, gates and sprues, mounting connections, etc. If the core is to be blown on a core blower, it becomes necessary to specify the type of core blower, the size of cartridge, size and location of exhaust holes.

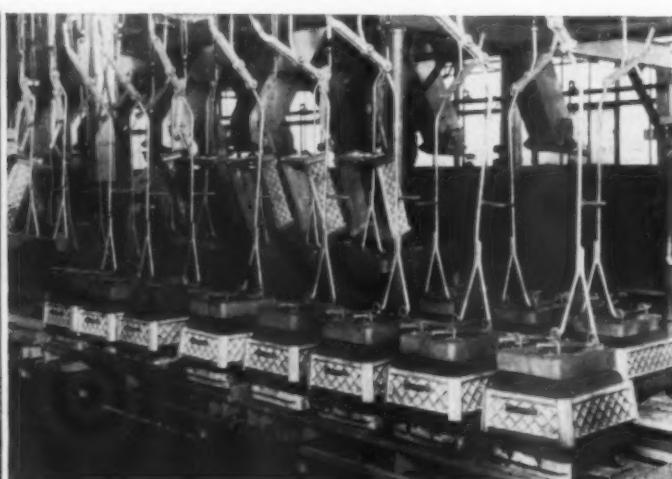
This discussion has hit only the high spots of the problem of preparing specifications for pattern equipment. The conditions which apply in each individual plant must be determined and can be standardized either through the preparation of basic specifications to apply to all patterns or to use such basic specifications and make such variations as the various types of pattern equipment may dictate.

The preparation and use of pattern specifications is a matter of observation and experience. It may be difficult, particularly if the buyer does not have the benefit of pattern making experience or has not worked in a foundry. Such knowledge can nevertheless be acquired.

Preparing molds for small castings. (Photo by courtesy of General Motors Corp., Detroit)



Modern equipment makes casting a production line process. (Photo by courtesy of International Harvester Co., Indianapolis)



# Foreign Trade and the Individual

By Grey Leslie

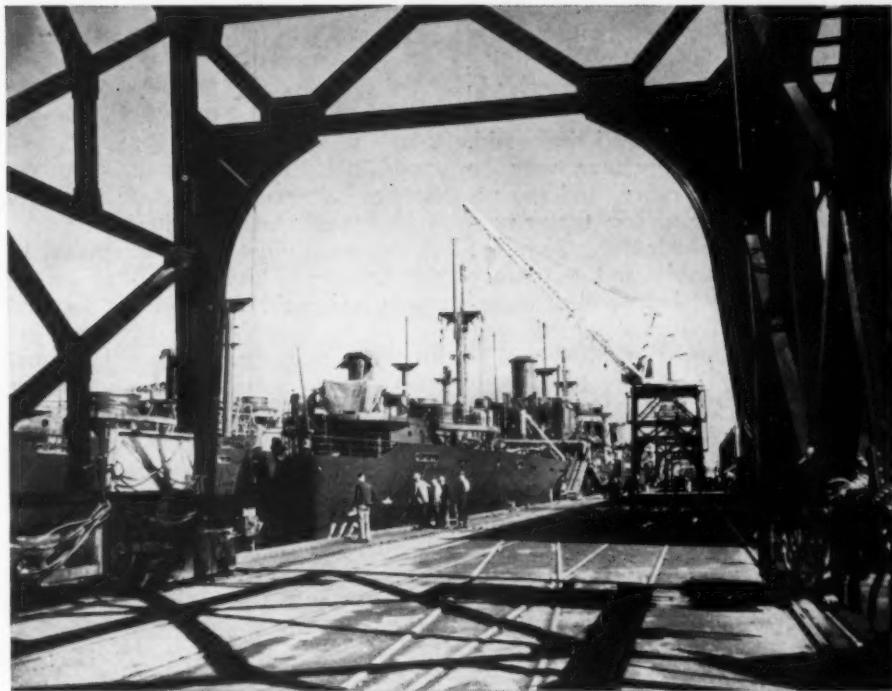
**W**ORLD Trade makes its home in the living room of every American family. That is true in the strictest literal sense. In doing so, it makes that living room more livable and provides comforts and conveniences that could not possibly be possessed without the World Trade that brought them to us.

In 1794, Xavier de Maistre published a little book entitled: "Voyage Autour de Ma Chambre"—"Journey Around My Room." A little less than a hundred years later Jules Verne wrote his "Tour du Monde en 80 Jours"—"Around The World In 80 Days." Thus these two French authors long ago gave up the limits of the field of travel. There could hardly be a more concentrated field of travel than a single room, and, until jet-propelled vehicles make inter-planetary tours possible, a journey around the world is still the largest continuous circuit one can make.

For the purpose of this study of how World Trade concerns each of us, let's take the shorter journey around the living room where the reader may be presently sitting. The pleasure and education, even the excitement and wonder, of such a journey will be limited only by the imagination of the traveler. There will be no nuisances of passports, customs inspections, linguistic difficulties, foreign currencies, and no expense whatsoever. We can start at any time and change the itinerary at will.

It would be a safe speculation to say that at least a dozen foreign countries have supplied something to add to the comfort and beauty of that living room, and perhaps a dozen more have contributed the less obvious but essential materials to provide its many conveniences. That thought should be intriguing to purchasing agents.

The wool in the carpets or rugs on the floor probably came from one of a dozen countries as widely scattered over the globe as Scotland, India, Albania, Argentina, or China. If so, it was gathered by shepherds, in mountain and valley, who have followed a timeless avocation, as count-



**Our living standards, as well as our national security, depend on imported materials.**

**Active world trade is the great hope for world economic recovery and stability.**

**America's leading role stresses the policy of putting world trade into business hands.**

less generations of their forebears did. The wool was sheared in season, washed and combed, graded and baled and weighed by a multiplicity of hands. It was bartered and traded for by skilled purchasing agents, and finally trundled to port by devious means, using humans and animals, to transport it to the gaping maw of the ship that carried it to America. There it was fashioned into carpeting and rugs of beauteous color and design, and fed into the modern merchandising stream that finally brought it to our homes in its new and useful form. The romance and adventure encompassed in that metamorphosis are boundless.

Any mahogany in the furniture in the living room undoubtedly came from Honduras, Cuba, Mexico, or far away Africa. To get it to Ameri-

ca the same multiple transactions were involved as in the case of the wool. The webbing in the upholstered furniture came from jute imported from India, and the kapok stuffing from the Philippines. If the pillows or cushions are hair-filled, the hair probably came from some South American country.

The basic materials for the furniture coverings or the mohair draperies came from Iran, Afghanistan, Turkey, or South America. The cycle of the complex operations of World Trade had to be set in motion to get these materials to us.

The ingredients of the paint on the walls and woodwork came from Brazil or Argentina or China, and the pigments came from Spain, France, Canada, or Belgium.

The coffee served on the coffee

table came from Central or South America. If the lady of the house serves tea, it probably came from China, India, Ceylon, Formosa, or Korea. The sugar may have come from Cuba. The cups came from France, Czechoslovakia, England or some other European country, or from China or Japan, Java or Malta.

When the hostess uses cosmetics to look her pretty best, her toiletries contain materials from all the world. The base of her perfume may be ambergris from France, and the essence from that same country or possibly from Belgium or Italy. The civet came from Ethiopia and the musk from China. The lady will be especially proud if the diamond that flashes in the ring on her finger came from the world famous Kimberley mines in Africa, via Amsterdam, Brussels, New York or London.

The smoking pipes that seem to give the man of the house so much comfort and that indefinable glow of inner contentment and satisfaction contain briar from Italy or Algiers. The tobacco he uses in them probably has a blend of other tobaccos from Turkey, Egypt, Greece, or Bulgaria.

The dainty clock that ticks away the pleasant hours may have works fashioned in Switzerland.

The origin of the *objets d'art* offers too tempting a detour and too fascinating a distraction for our present journey around the living room.

The prosaic but highly practical telephone instrument contains over thirty different materials of which at least fifteen had to be imported. The indispensable radio could not operate without mica from India, Mexico, the Argentine, or Canada, and if the instrument is a phonograph-combination the records for it are made from shellac from India or Japan.

When you flip the light switch you utilize an ingenious combination of materials from wide places on the earth. The tungsten in the light bulbs in the lamps and fixtures probably came from Canada.

Our journey around the living room is far from completed. If we indulged the fancy of exploring all the places that supplied the materials for the things it contains, we would be off on a long imaginary trek indeed. If we would contemplate the hundreds of other journeys and the other hundreds of transactions in trade and barter required to assemble and fetch them to their present usefulness we would be closely occupied for perhaps too long a time.

Our limited tour surely reveals how World Trade affects us as individuals in our homes. It adds to

our comfort and contributes a major share to the high living standards of which we are so justly proud. But our little journey may also stimulate some thought about the impact that World Trade has on the daily business of making a living and its effect on the industrial life of the nation.

The importation of the materials that go into the things enjoyed in thousands of American living rooms, plus the myriad other materials and goods that find their way into our essential industrial production, provides jobs for millions of Americans.

In recent months our attention has been forcibly directed to the importance of World Trade in our national economy. World War II taught us that our resources, vast and numerous as they seemed to be, were not inexhaustible. It also shattered the myth that the United States was or could be a self-contained nation. There are many basic materials and commodities for which we are today largely dependent on other nations, and in such circumstances, reciprocity in foreign trade has ceased to be of only limited concern, or a luxury, or something that can be deferred until the world's economy can be stabilized.

The Reciprocal Trade Agreements initiated by the United States over ten years ago, have been only partially effective in breaking through traditional barriers of resistance, domestically and internationally, but in the last year, we have enormously expanded the concept of our position in the international economic sphere. Our leading role in the completion of the Geneva Conference which aimed at a new globe-circling network of international trade agreements, has emphasized our vital interest.

Our launching of the stupendous recovery program for the Western nations of Europe included in the Marshall Plan, gives added evidence of our recognition of the enormous responsibilities of the United States as the world's creditor nation.

It has become clear that the importation of increased quantities of goods and materials from Europe and Asia is the only sensible program that will enable the countries of those continents to procure and pay for the goods and services which we supply them. We must continually expand our world markets to maintain full employment here and to insure the prosperity that can only come from maximum production. We have need of the raw materials and fuels of other nations, to replenish and sustain our own strength. We can use their goods to make a richer and

more comfortable life for ourselves as consumers. Buying their goods gives them dollars to pay for what they buy from us. Our goods and services will raise their standards of living and make them permanent customers for what we produce.

Purchasing agents have a special interest in this business of World Trade. It is another segment of their growing responsibility to keep fully informed and to have sound opinions on the impact of government foreign policy as it affects sources and tariffs on the materials required for steady and increasing American production, on which the importation of many basic materials depends.

Purchasing agents must now be fully prepared to take their proper places on the Industry Advisory Boards appearing before the various Congressional Committees considering reciprocal agreements, tariffs, and the multiple problems of foreign trade. They must also get their opinions before the Government Economic Advisors who are having an increasingly important role in the legislation affecting the economic health of the country.

The day of the star chamber tactics which made the Payne-Aldrich and the Hawley-Smoot Tariff Acts notorious, has passed. World Trade is no longer an abstraction in the thinking of the average American citizen. Our little journey around the living room shows that it is a force in our daily living.

There is a heartening note in the official pronouncement of policy issued by Paul G. Hoffman, Administrator of the Economic Cooperation Administration (Marshall Plan). In his explanation of procurement procedure, he emphasized that operations "will be handled to the greatest possible extent, through private trade channels. The countries involved either through their governments or private business firms will then be as free to make such arrangements as they desire with American exporters, importers, and manufacturers."

That promises to put the business of World Trade in the hands of businessmen. It offers opportunities to take honorable advantage of the position of the United States as the world's leading creditor nation.

Purchasing agents can take the challenge of the broadened concept of World Trade in stride. They can speak with the authority that comes from experience. Their rostrum exists in their National Association, their own industry, and company.

Management has a right to expect them to be informed and articulate.



President-elect Joseph W. Nicholson, Milwaukee, presents report of the Resolutions Committee.

THE 1948 Annual Conference and Products Exhibit of The National Institute of Governmental Purchasing, which was held at the Bellevue-Stratford Hotel, Philadelphia, Pa., October 17, 18, 19 and 20, incl., was an unequivocal success setting new standards of performance, achievement and delegate interest in the annual meetings of that body, of which the Philadelphia meeting was the third.

Not only were the conference sessions featured by a well-knit program of practical subject matter presented by capable speakers, but they were marked by consistent attendance. Likewise the Products Exhibit staged by some sixty manufacturers elicited considerable attention, attesting the concern of governmental buyers in the offerings of industry.

High spot of the meeting was an analysis of the National Survey of Salaries and Responsibilities of Public Purchasing Agents conducted by the Institute. It was revealed that the average salary of the 170 public purchasers reporting (state, city, and county), is \$5,185 per annum, and it was the sense of the composite purchasing agent represented by this average, that his annual income should be upped some 40%, or to \$7,148.

The results of some of the discussions on other pertinent subjects were reflected in the report of the Resolutions Committee. Among the resolutions duly approved were the following:

"The Institute will study the advisability of eliminating the necessity of advertising for bids in the pur-

# Governmental Buyers Report Progress and Plan for the Future

Legislative revisions are proposed to permit greater latitude in purchasing methods.

Emphasis is placed on wider use of standard specifications in public buying.

Comprehensive salary survey is presented at NIGP meeting in Philadelphia.

chase by municipalities of materials, supplies and equipment where the estimated cost is less than \$5,000, and also the advisability of eliminating bid and performance bonds under varying conditions. The Institute staff is requested to submit to the next annual meeting, a proposed statutory draft dealing with this problem for consideration by the members of the Institute."

#### Collaboration with Armed Forces

"The members of NIGP feel that procurement specialists in the armed forces can make important contributions to the further advancement of the public buying profession by making their very wide public procurement knowledge and experience available to state and local public purchasing officials. Furthermore, in the event of a national emergency increasingly close relationships between state and local buyers and procurement specialists of the armed forces will benefit our country by facilitating united action by the whole public purchasing profession in procurement programs or activities of the national government. The Institute will in every way further these relationships in the years ahead."

#### Federal Surpluses

"The Institute reaffirms its interest in setting up in the structure of Federal Government a procurement agency to continue disposal of war surpluses and peace time excesses to state and local governments in a regular systematic and equitable manner. The



John F. Ward, Deputy Purchasing Agent, Chicago, was chosen Vice President of NIGP.



John Splain, Commissioner of Purchase, New York City, and NIGP Vice President, described regulations of his department.

Institute will bring this recommendation to the attention of the Commission on the Reorganization of the Executive Branches of the Government, otherwise known as the Hoover Commission."

#### New Officers

Following are the names of the new officers elected for the 1948-1949 association year:

*President*, Joseph W. Nicholson, City Purchasing Agent, Milwaukee, Wis.

*Vice President*, John F. Ward, Deputy City Purchasing Agent, Chicago.

*Vice President*, John Splain, Commissioner of Purchase, City of New York.

*Treasurer*, Michael M. Donohue, Purchasing Agent, Allegheny County, Pittsburgh, Pa.

*Directors*: W. Z. Betts, Director, Division of Purchase and Contract, State of North Carolina, Raleigh, N. C.; Louis J. Cook, Superintendent of School Supplies, Board of Education, City of New York; Arthur B. Gathright, Director, Division of Purchase and Printing, Commonwealth of Virginia, Richmond, Va.; Alvin J. Holm, City Purchasing Agent, Los Angeles, Calif.; Joseph W. Nicholson, City Purchasing Agent, Milwaukee, Wis.; Leo Weil, Acting Commissioner, Division of Purchases and Supplies, Cleveland, Ohio; Ward Alexander, City Purchasing Agent, Schenectady, N. Y.; N. B. Henson, City Purchasing Agent, Hartford, Conn.; John Krieg, City Purchasing Agent, Cincinnati, Ohio; and Harry J. Aston, Director, Division of Central Purchases, Newark, N. J.

Albert H. Hall, 730 Jackson Place, Washington, D. C., is executive Director of NIGP.

#### Cleveland, 1949

The Board of Directors voted to hold the Fourth Annual Conference and Exhibit in Cleveland in 1949, and in Milwaukee in 1950.

#### Report by President Betts

The regular business sessions Monday morning followed a formal welcome to the city by Howard E. Stern, Director of Supplies and Purchases of the city of Philadelphia, as representative of the mayor. Mr. Stern, who is celebrating a "four months' anniversary as purchasing agent", said that it had been a real advantage to him to have had the full cooperation of the NIGP in solving the problems that have been laid on his desk.

President W. Z. Betts, Director, State Division of Purchase and Con-

tract, Raleigh, N. C., in his report on "Progress of the Year and Outlook for the Future in Governmental Purchasing", stated that had it not been for the efforts of the Institute "state and local governments would not have obtained much of the property, bought and paid for with taxpayers' money" that was disposed of in the Federal Government's surplus property disposal program. During the past year the NIGP has used its influence to "assist in setting up in the structure of the Federal Government a permanent Federal Property Agency to continue disposal of war surplus and to provide centralized direction to the disposal of peacetime excesses. We are convinced that public property should, after it is no longer useful to the Federal government, be made available in a regular systematic and equitable manner to state and local governments."

#### Committee Activities

During the year, NIGP has worked closely with other technical and professional societies, he continued. These include the American Hospital Association, the American Standards Association, the National Fire Protection Association, The Association of School Business Officials, the American Council of Commercial Laboratories, the National Office Management Association, the National Association of Exhibit Managers, and the American Trade Association Executives. In addition, Executive Director Hall has also assisted the United States Department of Commerce during the year in an advisory capacity on procurement personnel problems.

"The Institute has been called upon to assist our Government in several significant ways during 1948," he continued. "Special assistance was

**Michael M. Donohue, Allegheny County Purchasing Agent, Pittsburgh, was re-elected as Treasurer.**



rendered to the Federal Trade Commission and to the U. S. Department of Justice in connection with investigations of alleged violations of Federal Trade statutes.

"Your president has been designated as an advisor to the Bureau of Federal Supply of the U. S. Treasury Department.

"The Munitions Board of the National Military Establishment is currently seeking the assistance of the Institute in connection with certain fundamental studies in the area of costs of public procurement. We have established close relations during the year with the procurement sections of all branches of the Armed Forces of the United States."

Reviewing the organization and first meetings of the National Academy of Public Purchasing, he said the first sessions were outstandingly successful and plans are now under way for a further development of this unique in-service training program for public purchasing executives on a national scale. Concluding his report, Mr. Betts said that the Institute "is now a solidly established professional organization with a record of accomplishment behind it and an opportunity for increased public service ahead. It has great potentialities for service."

#### The National Academy

Robert LeFevre, special assistant to Clifton E. Mack, Bureau of Federal Supply, Washington, D. C., told about the National Academy for Public Purchasing, which held its first meeting in Washington last April. He said that the discussion periods "left no doubt that there was a lively and healthy interest in the problems of public purchasing and a desire to solve them in the public interest."

Saying that the problems of public

**President W. Z. Betts, North Carolina, reported on the year's progress and future outlook in governmental purchasing.**



purchasing officers are peculiar to the field of public purchasing, he continued, "We all know that we must operate within a framework of regulations and statute and that some of these are not as well designed for the purpose as might be. There is a high degree of accountability, the need for complete documentation and not infrequently matters of public consideration.

"I would like to suggest three areas that I think can be explored with considerable profit. They are work simplification, human relations, and in-service training. They are really interrelated and some attention devoted to them can produce surprising results. Achieving simple and direct ways of doing things, bringing about a better understanding between the public and the public office, developing skilled and effective employees — these are all well worth thinking about.

"If the Academy is to serve the purpose intended it must be available to all parts of the country and it is expected that plans will be perfected to hold sessions in the various population centers. There has been discussion of a plan to have a West Coast session, possibly in San Francisco, and to present one in the Middle West, perhaps in Chicago."

#### Industrial Standards

George F. Hussey Jr., (U.S.N. Ret.), Secretary of the American Standards Association, New York, defined the ASA as a federation of technical societies and trade associations serving as a national clearing house for standards. It provides the machinery for the establishment of standards, he said, when there is a need therefor.

"When you employ an American Standard on a requisition," he con-

tinued, "you are assured that you are speaking the language of the industry that makes the product you want to procure. You are provided with a specification that has been evolved by outstanding experts in that field.

"One of the vital jobs all of you face is stretching the government dollar as far as it will go. It is entirely proper for you to suggest to your technical people that they give due consideration to standards already in existence. They may well find that in the vast majority of cases approved standards are already available, which may prove to be far less expensive."

#### Standards and Specifications

At the following business session, Standards and Specifications was the subject of a forum discussion led by Willis S. MacLeod, Deputy Director, Standards Branch Bureau of Federal Supply, U. S. Treasury Department, Washington, and Dr. C. W. Winchell, Service Division, U. S. Testing Company, Inc., Hoboken, N. J.

Mr. MacLeod stated that every purchasing officer should have a copy of the National Directory of Commodity Specifications, (available from the Superintendent of Documents, Government Printing Office, Washington, D. C.) which lists 40,000 standard specifications, covering the whole gamut of technical societies, associations, and so on. Mr. MacLeod's interesting paper appears elsewhere in this issue of PURCHASING Magazine.

"In the present inflation, tax funds have not doubled as has the cost of most essential commodities," Mr. Winchell declared. "The Government Official must get the 'mostest for the leastest'. Necessity forces us to reduce waste by systematically and scientifically seeking ways to get true value for each dollar we spend.

"Few investments return greater dividends than a good purchase testing program, for testing clearly shows us which is the right way to buy. Commodity testing is now a 'must' for the professional purchaser.

"Why is a testing program so rare? Because some of us do not know how and where to begin. I urge this organization to set up an operating committee to act as a clearing house in finding specific answers to a member's inquiry such as 'What has proved best in your experience?'

"Another reason given for the absence of a testing program is the lack of technical help and laboratory facilities. Sometimes the laboratory and technicians are considered an 'expense'. At a cost of less than \$17,000 New Jersey saved \$170,000 during the 18 months' existence of its testing program, and the surface was barely scratched.

"Another reason that testing is not utilized is that it is new. Few persons outside of our purchasing organizations and an occasional forward-looking civic group are interested in testing as a dynamic purchasing accessory. It is up to us to sell the 'Best by Test' idea, for purchase testing is fair to the vendors, profitable to the taxpayers and stimulating to ourselves. The officials over us and our assistants gain confidence in the work we are doing. They know buying on test is good buying, for good buying is efficient, quality buying."

"It has been my feeling that purchasing without the necessary follow-up of inspection and testing loses one of the essential safeguards which protects a municipality in seeing that what was ordered was delivered," said John F. Ward, Deputy Purchasing Agent, City of Chicago.

"The question in my mind when I

Few investments return greater dividends than a good testing program, declared Dr. C. W. Winchell.



was with the county was whether or not it would pay to install our own testing laboratory. The volume of purchases of the county did not warrant this. However, we were strongly imbued with the feeling that we must have laboratory tests on spot deliveries and on 'blind' articles. We decided on contracting for outside laboratory services, in which we made use of the laboratories of the local universities, the coroner's laboratory, the state's laboratory and facilities of Commercial Testing and the United States Testing Company.

"As a result of tests, the county made sizable savings due to the following reasons: (1) It had a psychological effect on vendors and receiving clerks. (2) Where vendors delivered sub-grade materials more than as found in normal commercial practice, such vendors are declared irresponsible and removed from doing business with the municipality. (3) Collusive agreements between receiving clerks and salesmen can be detected by such tests. (4) Public inspection of the records where the laboratory tests are involved give a warranty that the purchasing agent is attempting to protect the taxpayers' dollar.

"Testing and inspection is one of the important tools in any procurement agency. It is important in government that the municipality is assured of dollar value for dollar spent. Testing and inspection provide such safeguard. If a municipality does not have such testing facilities of its own, I feel it is important that they use outside testing services, for not to test deliveries on some of our 'blind' articles leaves a procurement officer open to severe criticism."

#### Tuesday's Sessions

The Tuesday sessions were devoted to the presentation of the Survey conducted by NIGP on Salaries and Responsibilities of Public Purchasing Officials, a forum discussion on Eliminating Bid Deposits and Performance Bonds led by John Splain, Commissioner of Purchases of the City of New York and Omar T. McMahon, Assistant City Attorney, Milwaukee, Wis. John F. Ward, Deputy City Purchasing Agent, Chicago, presided.

Speaker at the official luncheon meeting was Dr. Stephen B. Sweeney, Director of the Institute of Local and State Government, University of Pennsylvania, Philadelphia, who spoke on "Government Training at the University Level."

The principal feature of the Tuesday afternoon session, which was under the direction of Michael M. Donohue, County Purchasing Agent,

Allegheny County, Pittsburgh, was a talk on "Organizing and Operating a New Purchasing Department", by Leo T. Murray, head of the newly organized purchasing department of the City of Chicago.

#### Survey Reveals Average Salary \$5,185

That public purchasing men consider themselves substantially underpaid was the substance of the National Survey of Salaries and Responsibilities of Public Purchasing Agents, in report submitted by David Joseph, Special Survey Director, NIGP, based on data in 170 questionnaires representing all levels of government.

Questionnaires were filled out and submitted by 21 state purchasing agents, 27 county purchasing agents, 94 city purchasing agents, 16 school boards, 5 colleges, 2 'authorities', 1 district, and 3 in other categories. In the case of school boards and universities, Mr. Joseph reported that it was not felt there was sufficient representation to place emphasis upon the data received.

"Perhaps to most public purchasing agents the direct question of salary is most interesting," his report states. "It is of course the significant focal point of the survey. Salaries range all the way from \$1,000 to \$12,000 a year. The over-all average annual wage of those responding to the questionnaire is \$5,185. The average of salaries in the 20 states reporting on this question is \$6,154. The average in 79 cities is \$4,780; the average in 24 counties is \$5,709."

Salaries of men and women holding "comparable government positions" such as librarian, assessor, public works director, engineer, etc., ranged from \$2,800 to \$15,000 with an average of \$6,817 as compared with \$5,185 the average salary paid to purchasing agents.

The survey establishes conclusively the absence of correlation between salaries and volume of purchases.

The report also revealed that there does not appear to be any relationship between the number of employees under a chief purchasing officer and his salary.

"We found," says the report, "that 139 agencies reporting in detail on this question have under their jurisdiction 987 persons engaged in direct buying, 161 in specification writing, 93 in testing, 255 in inspecting, 1,381 in warehousing, 229 in delivery, 688 in accounts and records and 258 in voucher preparation.

"The difference in methods of operation between city and state governments are shown by the figures of those engaged in direct buying. In 17

states 208 persons of a total of 390 are engaged in direct buying. In 70 cities 196 persons of a total of 1,135 are engaged in direct buying."

"Among the elements that enter into a consideration of the problem of compensation one must include tenure. The figures indicate that 109 of 149 public purchasing agents reported that they do not hold competitive civil service positions and that 33 do. Among 19 of the state purchasing agents who responded, 16 do not hold positions with civil service tenure and 3 do. Of the 79 municipal purchasing agents who responded 55 do not hold positions with civil service tenure and 21 do. Four county purchasing officials hold positions with civil service tenure and 17 do not; 13 school purchasing agents do not have civil service tenure and 3 do. One of the college purchasing agents has civil service tenure and 4 do not.

"First assistants to purchasing agents seem to occupy positions with civil service tenure in greater number than do the top men in the departments. This is especially true in cities where 29 first assistants hold civil service positions as against 17 who do not."

#### Commodities Bought

"Of all commodity groups, the largest dollar volume is found in fuel, where 86 municipal purchasing agents reported an aggregate of more than \$20,000,000 a year. The three next largest dollar volumes are found in food, where 71 purchasing agents reported that they spend \$12,300,000 a year; automotive equipment, where 82 reported that they spend \$12,185,000 a year; and building and construction material, where 81 reported that they spend over \$13,000,000 a year. Eighty-one municipal purchas-

**Howard E. Stern, Director of Supplies and Purchases, Philadelphia, served as General Conference Chairman.**



ing agents reported that they spend more than \$3,800,000 on printing, and more than \$2,300,000 on paper, stationery and office equipment.

"Fuel is not a top cost factor in the reports of state governments. The largest dollar volume reported by an aggregate of 19 states goes into food, which aggregates more than \$32,000,000 a year. Building and construction costs more than \$14,400,000 a year. Fuel is third on the list with an aggregate annual cost of \$13,500,000. Automotive equipment reported by 18 states aggregates more than \$12,300,000 a year.

"Dollar volume in commodity groups is obviously not a measure of the extent and nature of buying problems, for it is in the coast area of hundreds of different commodities, purchased in relatively lower volumes, that the big governmental purchasing problem is to be found.

#### *Compared with Industry*

"The preponderant view is that the level of salaries of purchasing agents in private industry is pertinent to the problem of setting salaries of public purchasing agents." The following are some of the reasons advanced by those replying affirmatively on this question:

"We lose our best personnel to industry."

"We are a training school." (for industry.)

"Public purchasing agents are grossly underpaid in comparison with salaries paid in private industry."

"Responsibility and intensity of work compare in every respect."

"The same ability should be worth the same wherever it is used."

It was also felt that the public purchasing agent is far more responsible because of: 1—Laws to be ad-

**Albert H. Hall, Executive Director of NIGP, Washington, has coordinated the Institute's work with other agencies.**



hered to; 2—Pressure from within and without the organization; 3—Diversity of purchases.

#### *Bid Deposits*

Speaking on "Eliminating Bid Deposits and Performance Bonds," John Splain, Commissioner of Purchase, City of New York, said in part:

"In the City of New York, the Board of Estimate, which has powers delegated by our city charter, has made a regulation that every bid for a contract shall be accompanied by a deposit in approximately the sum of 2% of the amount of such bid. There are minor modifications, but the essence is that there is a security bid deposit of 2% which must accompany all bids on contracts. Conversely, the regulations of the Board of Estimate explicitly provide that no performance bond can be accepted for the performance of any contract.

"The experience of the Department of Purchase shows that we have no record of availing ourselves of the security deposit, and there is the blunt statement on the part of those who handle our contract work that the security deposit would seem to be unnecessary.

"When we do receive security deposits they are handled at least seven times, including the transaction of returning them to those bidders who are not successful, and to those who were successful, received awards of contracts, and properly executed their contracts.

"An analysis of 1700 contract awards in the last 12 months indicates that the average is approximately \$2,000. If \$40 then, be regarded as the average security deposit, and each must be handled by the Department of Purchase and the Comptroller a total of seven times—and if you will

**David Joseph, Special Survey Director, gave a comprehensive analysis of the salary situation.**



give due weight to the fact that we have had no recourse upon the security deposit alone to compensate the city because a contractor accepted the award, it will be realized from the standpoint of simple business efficiency that a security deposit has served no necessary or satisfactory purpose. The cost of these handlings, measured against the total of the deposit, would seem to be a prohibitive and unnecessary cost.

#### *Performance Bonds Prohibited*

"Performance bonds are prohibited in the contracts issued by the City of New York. You will realize from your own experience in the purchase and procurement of materials that a performance bond is a cumbersome, unwieldy and unsatisfactory device in ordinary purchasing. Within my knowledge, the City has suffered no loss since it refused to permit performance bonds, that would not have occurred even with a performance bond. The Corporation Counsel of the City of New York is the head of one of the largest law offices in the world, and is so organized and so departmentized that it can keep close contact with every phase of the city's work, and is in position to pursue and to prosecute where the city's interests have been disadvantaged. The Comptroller is responsible for all expenditures, and his office is so organized as to have specialized inspectors, competent to pass upon every purchase and every contract made by the City of New York.

"For that reason I would say that the experience of the City of New York is not a certain guide when considering the advisability, or otherwise, of performance bonds for the execution of civil engineering contracts. We are fortunate in being allied with

**Leo A. Murray described the reorganization and methods of Chicago's new purchasing department.**



these other city agencies as no contract can be awarded, even through the Department of Purchase, without the approval of the Corporation Counsel, and performance is precisely checked by the Comptroller's inspectors.

"However, there devolves upon us the duty of seeing that we deal only with reliable, responsible contracts. We endeavor in all cases where new concerns ask to be included in our bidders' list, to determine in advance whether or not they are responsible and therefore worthy of receiving awards, whether for contracts or open market orders.

"That is a duty that belongs not alone to government purchasing; it is equally necessary in private purchasing for large and small corporations all over the commercial world. We go a little further than do private corporations in this matter, because we prefer to, but also because we must."

#### The Milwaukee Experience

Omar T. McMahon, Assistant City Attorney, Milwaukee, Wis., talking on the same subject, said in part:

"There is a very pronounced lack of uniformity in the competitive bidding statutes and charter provisions applicable to the various local municipalities, large and small, throughout the land. There is considerable lack of uniformity in the competitive bidding requirements for the various boards, commissions and officers of individual cities which have purchasing powers in their respective fields.

"Milwaukee is no exception. Its Commissioner of Public Works in construction contracts must call for bids when the estimated cost thereof exceeds \$200; the Milwaukee Board of School Directors and its Vocational Board, which exercise their powers independently of the Common Council, must call for bids where the amount involved exceeds \$500; its Central Board of Purchases, created in 1917, must call for bids where the amount involved exceeds \$2,000; its Board of Harbor Commissioners must call for bids involving \$1,000 or more, excepting that it may, without competition, contract for work or supplies or materials in marine construction, repair or other work requiring the use of floating scows, pile drivers, or other floating equipment, where less than \$2,500 is involved; the city sewerage commission must call for bids on projects involving \$1,000 or more.

"There is little that can be said in favor of these varying limitations.

"The Wisconsin Statutes and City Charter provisions require bidders to

post a surety bid bond in a penal sum, that is, at least 30% of the amount of the estimate for the work, or materials, supplies and equipment; but in lieu thereof the bidder can deposit a sum of money by *certified check* equal to 15% (5% in school board contracts) of the estimated cost involved. The bond or certified check is exacted as a guarantee that the low responsible bidder receiving the award will execute the contract. In default of the execution of the contract, the amount of the penal bond or money deposited is forfeited to the city as liquidated damages.

"During the last 12 years, in only a few cases, perhaps less than a half dozen, did the low responsible bidder decline to sign the contracts. In that same period, in all City of Milwaukee cases, not more than 20 contractors failed to perform with satisfaction their contracts, not only for the sale and delivery of materials, supplies and equipment, but their construction contracts as well.

"It must be borne in mind that all bidders add their bond premiums to their bid prices; so the city pays the bond premiums of the successful contractors. The unsuccessful bidders lose the money paid out for their bonds. The bond premiums usually range from a minimum of \$5 to a maximum of hundreds of dollars, where the contract price is in a very substantial sum.

"Do cities get value for their bond premium outlay? The answer probably is "No".

#### Bidders Should Pre-Qualify

"The main objectives of both bonds can be obtained by compelling all bidders to pre-qualify. Whether or not the statutes or charter provisions expressly authorize pre-qualifi-

cations, the municipalities can request bidders to pre-qualify and can reject their bids if they fail or decline to pre-qualify.

"No seller has any so-called unconditional, inherent or vested right to bid on public contracts. The public authorizes, with a reasonably accurate knowledge of the bidder's financial responsibility, from experience gained with the bidder in prior similar contracts, knowing the size and ability of the bidder's staff, technical or labor, the quality of the materials, supplies, and equipment he offers for sale and his reputation generally among the public and his competitors, have sufficient information to judge whether he will sign the contract and then perform it in a reasonably satisfactory manner."

#### Training for Public Service

Dr. Stephen B. Sweeney, Director of the Institute of Local and State Government, University of Pennsylvania, said that among other things the objectives of the work of the Institute were to train selected college graduates for future service as local and state government officials, to provide technical advice and services, and research assistance to local and state governments. The most obvious advantage to be sought, he said, is that the procedure and methods of government business be improved, and efficiency and economy should result.

Experience is a good teacher, he said, but it is a slow one. It is more economical to learn from the errors and mistakes of others, and in-training should promote special skill in the approach to governmental problems. Often the solution of problems found in other places can be adapted to a given locality. Not only should

Past President Albert Pleydell presented a gavel to President Betts at the luncheon meeting.



Maurice S. Park of Dane County and Philip A. Moreau of Superior represented the Wisconsin Chapter of NIGP



each employee have an appreciation of his own job, but he should have understanding and respect for the problems of his fellow employees. Besides learning the "how" of his work he should also learn the "why" and its place in the overall structure.

Dr. Sweeney reviewed in detail the in-training of students in government offices, and said that often the students are given staff jobs that public officials have been unable to include in their budgets. Studies include the application of machine methods for keeping office records and accounts, development of organization charts, the preparation of annual reports, reports pertaining to purchasing, market prices and study of trends.

#### *The Chicago Purchasing Department*

Leo A. Murray, City Purchasing Agent, Chicago, Ill., who was Assistant Purchasing Agent, Western Electric Co., for 27 years, and previously spent 18 years in the Western Electric Shops, reviewed the establishment of Chicago's centralized purchasing program, which he and others have been working on for the past ten months.

Previously, the various city departments did their own purchasing. The result was "a certain amount of balking", but the difficulties were overcome when the various departments learned that it was the aim of the purchasing department to be of helpful service to them. Under the new procedures developed by the purchasing department, in lieu of previous long waiting for approval of orders, departments can now start requisitioning against contracts let by the purchasing department within ten minutes after the contract is passed. "After a short time of that", he said, "all of the department heads wanted

to come in and kiss us. They never had such service before. It was a matter of educating people other than in the purchasing department and I think we did a good job.

"The purchasing department also has the responsibility of operating all storerooms, of which there are 422. Our entire working force is 220 people, 55 of whom are in the office at the City Hall. The rest are scattered about the city in various store rooms doing different types of work.

"The department also has the responsibility of approving all invoices coming from suppliers. Receiving clerks immediately notify the purchasing department of the receipt of material from suppliers. Where there is a discount involved, the city of Chicago is taking it. That may be a surprise to a lot of people but we are doing it. We check the invoices against the master purchase order for quantity, quality, and if a discount is involved we put a red flag on them and pass them to the Controller's office. That office has been working well with the purchasing department and they are now taking advantage of the cash discounts, which now approximate \$60,000 to \$75,000 annually. The time will come when they will be greater.

"Many suppliers never thought of giving the city a cash discount until we asked for it. They were accustomed to wait 60 to 140 days for their money. They are now allowing the cash discount.

"The City of Chicago has a Board of Standards, whose function it is to set up standard specifications for all supply items. This board is composed of three well known industrial executives, namely the Vice President and Director of Purchases of Fairbanks Morse & Co., the General Purchasing Agent of the A. T. & S. F., and the former Vice President and Director of Purchases of the International Harvester Company. Three city department heads are on the Board of Standards. The purchasing agent is chairman of this Board. The Board assigns to various committees, the job of studying various items for which standard specifications are to be drawn. We have under way at the present time some 53 specifications. When specifications are prepared they are submitted to the Board of Standards. If the Board is satisfied with the specification prepared by the advisory committee, they approve it, and once it is approved no one can change it except the Board. Departments must use materials that conform to these specifications. There are no ifs, ands, or buts about it.

#### *Advertising for Bids*

"We have to advertise for bids on orders over a thousand dollars in what we term the official newspaper of the City of Chicago. We also notify vendors who we feel might be interested. We are required to advertise for ten days.

"When bids are opened we refer the proposal to the using department. We are not required to do that, but we do it out of courtesy to them, giving them three days to raise any objections. If there are no objections, we make our recommendation to the City Council for approval, and we are required by law to award the business to the lowest responsible bidder.

"If the recommendation that goes to the Council meets approval, they approve it. If they do not, there is nothing they can do about it except to reject it. This makes it necessary to re-advertise. The Council has no authority to say, 'Buy it from the

**Women have an important role in governmental buying.** Front row: Amy H. Dutcher, City of Long Beach, Cal.; Margaret Williams, University of Wyoming; Dorothy Boland, Cook County, Ill. Standing: G. McQuiggan, City of Akron, Ohio; Mary E. O'Connor, State of New York; Esther M. Jenkins, Montgomery County, Pa.

**Richard Neumaier, systems analyst, and Carl H. Chatters of the American Municipal Association.**





Typical booths at the Products Exhibit.

other fellow.' The Council may get the same recommendation back a second time, but we have not run into much trouble in that respect. Out of some eight or nine hundred recommendations made to the Council, we have had only four rejections.

#### **Salvage a "Gold Mine"**

"We have another section; that is the salvage bureau. The only department that can dispose of salvage is the purchasing department. The chief clerk of that department has dug out of corners and vacant lots and elsewhere an unbelievable amount of scrap, and the scrap department has been a veritable gold mine to the city. Also through his efforts, re-use of otherwise scrap material has saved considerable money.

"It is impossible for any one to make a purchase for the city of Chicago, except the purchasing agent. He is the sole contracting agent. That applies to paving jobs, bridge jobs, construction, or anything that the city pays out money for. The only man who can sign a contract and make it valid is the purchasing agent.

"Under the law I am prohibited from buying anything that costs over \$1000, without 50 aldermen passing on it and approving it. It doesn't make too much sense to me. I think an experienced purchasing agent should be empowered to spend more money than that. However, that is the law and I must abide by it.

"It seems that we do our purchasing the same way that industry does, only they do it backwards. In industry the Board of Directors' approval is secured for big jobs, and then the purchasing department buys within the allotment. In Chicago we get all the prices first, and then the 'Board of Directors' decides whether you can spend the money. It should be the other way. If an appropriation is approved, the purchasing agent should be permitted to go ahead."

Richard Neumaier, Systems Analyst and Consultant, Philadelphia, was the first speaker on the Wednesday morning program, which was presided over by Alvin J. Holm, City Purchasing Agent, Los Angeles. Mr. Neumaier's address concerned itself with the plan to improve the systems and procedures of his department, dealing with the recommendations which have been adapted or are in the process of being installed.

The Department of Supplies and Purchases issues to all departments a loose-leaf catalog listing all warehouse stock items. The items in this catalog are numbered by the Dewey Decimal System for simplified indexing, ordering and posting, and eliminate many errors. All departments are requested to requisition warehouse merchandise on a 5-part carbon interleaved snap-out form. This 5-part set is used as the requisition and posting copy and the final charge copy for the transfer of funds from the requisition departments to the warehouse account. The 5-part stock requisition form eliminates the copying of the requested items on warehouse and charge forms.

The stock item catalog enables all departments to take advantage of the lower stock item prices which are bought at quantity discounts and charged at cost plus 5% for handling.

#### **Commodity File**

To check up on the activities of all departments and to be able to combine purchases, a commodity purchase file has been established. All requisitions are posted in this file. A periodic check-up reveals the items which are requested by more than one department and which are ordered often enough to be carried in warehouse stock. It also indicates similar items which can be standardized for combined purchases. The file also reveals when departments are requisitioning frequently, in too small quantities and

when requisitions are too large.

To avoid all repeat typing operations, a translucent copy of the original bid is prepared simultaneously with the typing of the bids or master copy. The copy on translucent paper can be duplicated on an Ozalid reproducer. This process has been adapted to the reproduction of office forms and reports, and is the ideal solution for producing the four copies of the award schedule, the three copies for the purchase contract and the six copies of the purchase order.

#### **Awarding of Contracts**

That the sizes and headings of the forms are not identical is no factor in this duplicating method. The main factor is that the information in the original can be transposed, rearranged and reproduced on any size form in as many copies as required and with any additional information typed, stamped or written on the original translucent copy.

A further step, not yet in operation, is the elimination of the original typing of the bid form. If the department requisitions are prepared on translucent paper, with a copy layout to tie in with the bid form it would also be possible to eliminate the proposed 5-part carbon interleaved snap-out stock item requisition form and use the Ozalid copies instead.

#### **Public Financing**

Carl H. Chatters, Executive Director, American Municipal Association, Chicago, in a talk on public expenditures and the financing thereof, said there just isn't enough labor, material, or money to do everything that everyone would like to have their cities do. He said that in deciding what a community should try to finance, the interests of private business and the public must be carefully kept in mind, for private business directly and indirectly provides the money for government. On the other

hand, private business cannot function without the services and protection of local government.

He said that the federal government should consider the abandonment of the admissions tax, utilities excise tax, telephone tax, and other taxes whose yields are low compared to collection cost, and which can well be administered at local levels. This would permit localities which need money to obtain more of it through local tax sources. Increased municipal revenue will be required, he said, as long as prices and wages continue upward.

Local public borrowing, he continued, is bound to increase in dollar volume at rates of interest substantially higher than municipalities paid in 1946 and 1947. Mr. Chatters stated that many communities lose more money through poor borrowing than any other cause. Bond issues should be more carefully prepared, and more information should be given to investors. "As a group you have considerable interest in public borrowing because you spend the money that he borrowed," he concluded.

#### *Purchasing on Specification Performance and Brand*

The closing session was featured by a round table discussion on Purchase on Specification, Performance and Brand, led by Mary E. O'Connor, Director of Purchase, New York State Division of Standards and Purchase, Albany, N. Y.

"Many governmental statutes require open competitive bidding," declared Miss O'Connor. Without a specification against which offerings may be evaluated, there can be no determination of low bidder. We are

considering four procedures, individually and collectively:

"(1) Purchase on the basis of standard specifications. This procedure is mandatory under many governmental statutes. The larger governmental purchasing units maintain a bureau of standards and laboratories, but the greater number of purchasing bureaus, particularly at the county and city level, have no such service. In many procurement offices no provision is made for hiring technical experts qualified to write specifications, and it is not always possible to draft such experts from other bureaus at a time when they are needed.

"(2) Purchase by trade name or brand. Under a mandatory statute requiring open competitive bidding, a trade name or brand in itself constitutes a blind specification, not openly competitive, and therefore exclusive. Consequently it is customary to supplement the trade name or brand with the words 'or equal'. The very reference to equality implies a standard or specification which must be made available to both the buyer and prospective bidders if competition is to be encouraged. A determination of equality is impossible by either the buyer or prospective bidders until the specification is made available to them. Yet the owner of the trade name or brand does not always supply this information.

"(3) Performance. Under the heading of 'performance' alone as a basic specification for competitive bidding, purchasing agents have run into some difficulty in the courts on the grounds that such specifications are indefinite and insufficient as a basis for competitive bidding.

"(4) Purchasing on Specification, Performance and Brand. Here the main problem is the availability of a technical staff to assemble such specifications so that one section will supplement and not contradict another.

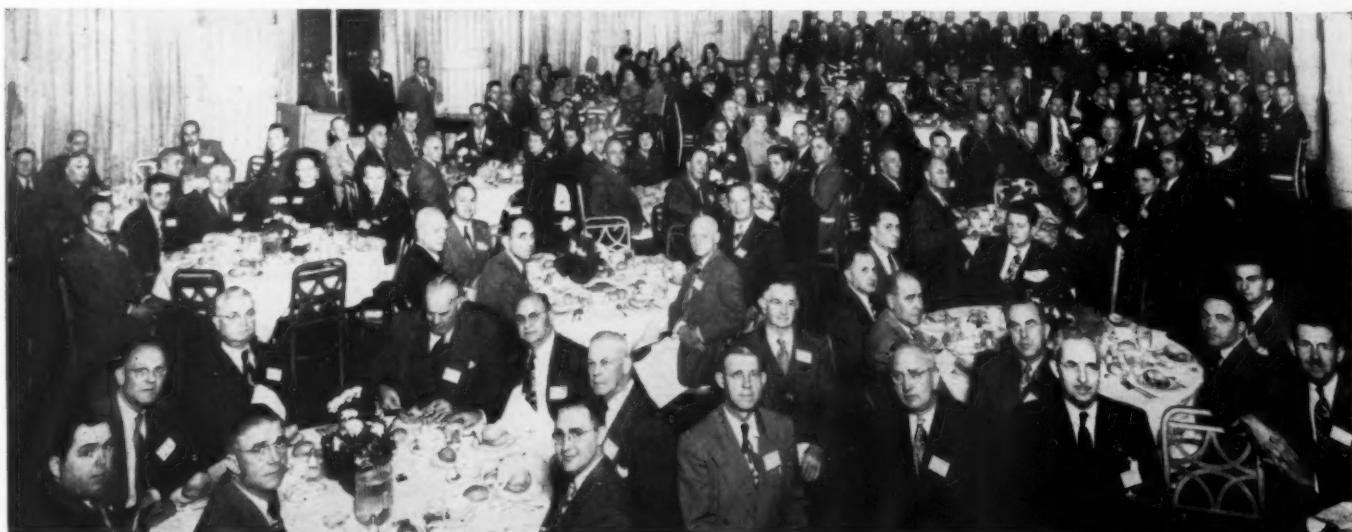
"Our object is to determine what form of specifications are most adaptable to the greatest number of governmental procurement agencies and possibly to recommend a method of standardization in accordance with trade practice which would be acceptable to the great number of participating agencies. To this end we invite the cooperation of government and industry since it is a mutual problem.

"Fundamentally we must remember that under proper buying procedures, government is an A1 customer, entitled to all the consideration granted by industry to its best customers; and that under no circumstance should government be classified or classify itself as a retail customer. Governmental buyers who wish to take advantage of an A1 rating in business must conform to trade standards and customs and be businesslike and ethical in all their dealings."

#### *The Wisconsin Chapter*

Maurice G. Park, president of the Wisconsin Chapter of the NIGP, Purchasing Agent, County of Dane, Madison, Wis., briefly reported on the organization and activities of the Chapter, seven of whose members were present at the Philadelphia Conference. The chapter holds quarterly meetings, and the three meetings held to date have been well attended. Dues are \$1.00 a year. The chapter is the first of its type affiliated with the NIGP.

Luncheon meeting at NIGP Conference, Bellevue-Stratford Hotel, Philadelphia



# Commodity Standards in the

**Standards are an aid to purchasing, inspection, storing, issue, and accounting for materials.**

**How to write a specification that will insure maximum quality and value.**

**Reliable standards are available for a broad variety of purchased materials.**

By **Willis S. MacLeod**

Deputy Director  
Bureau of Federal Supply  
Washington

OUR whole economy—raw materials, production, manpower, transportation and distribution—is a vastly more complex one than that which confronted us before World War II. Even though the period just preceding the war gave us strong indications of the growing complexities and problems in the commodity field, none of us could foresee the extent of the highly complicated system evolving. We must now set our sights on the supply job as an over-all operation—we can no longer consider it from the single viewpoint of purchasing.

Standardization, inspection and testing, transportation, storage and warehousing, means of distribution, the control of inventories, the accountability for the property, the maintenance of equipment, the disposal of surplus, and lastly fiscal supply accounting are inseparably bound with the supply function. The supply man, therefore, must broaden his vision to take into account the part he plays in each of these functions.

## Standard Specifications

First of all, we must know the commodity to be supplied and the service it is required to give. The most practical and sensible approach to establishing these criteria is to buy on standard specifications. Through the introduction of the common language of clearly understood quality

Abstract of an address at the annual meeting of the National Institute of Governmental Purchasing, Philadelphia, October 18, 1948.

taining as it does not only the appropriate design, construction and performance requirements, but the method of sampling, inspection and acceptance, makes possible more effective expediting or follow-up of the purchase during both the manufacture and the shipment of the goods within the delivery schedule.

## Acceptance Inspection Basic

The purchase cannot have been considered to be completed until acceptance inspection has occurred. Inspection of the material at the manufacturer's plant before shipment is greatly to be preferred. If an inspector is not available, however, or an inspection organization cannot be justified, the second best bet is to inspect the material on receipt at the delivery or supply point. The inspection phase of commodity standards is a must requirement in all contracts—even though the purchasing officer elects to waive the requirement on notification by the supplier of readiness for inspection.

The standard specification provides the medium through which optimum packaging requirements can be established. As a result, the purchasing officer can introduce a high degree of control in the cost of shipment and provide himself and the user with assurances that the material will be delivered in good order; the cost of packaging is more reasonable in terms of the net worth of the material and the protection it must have in shipment.

President-elect J. W. Nicholson, retiring President W. Z. Betts, and Honorary President Maurice G. Postley of NIGP.



# Supply Operation

Supply cannot be considered to be complete unless it takes account of furnishing the user with his repetitively consumed materials on a continuing basis of issue. The storing of stock items of regularly used materials and supplies meets this responsibility. The identification of the items on a uniform basis through the provision of a practical catalog of standard items simplifies the problem of estimating requirements for both spot purchases on direct delivery and maintenance of an inventory of standard stock items. The system of inventory control, of property accounting, and of fiscal control also depend largely on the uniform language of standard item identification provided by such a catalog system.

## Replacement Parts

In addition, the materials and parts with which to properly maintain equipment in service and the basis for establishing a *parts maintenance policy* is greatly facilitated by identifying the items regularly used and considered standard for the supply system. By parts maintenance policy, I mean determining, through study and research, the approximate number and type of replacement parts that a particular machine or piece of equipment will require to keep it operating smoothly and the level of assembly of the item which it is most economical to install. Also the point at which it is more economical to buy a new machine than to pay for upkeep on an old one.

In its true sense, commodity standardization means selecting, as standard items for regular use, the most economical commodities in terms of serviceability for the functions to be performed; determining which items or materials, such as replacement parts, may be used interchangeably or may be substituted for others; and excluding from the supply system unnecessary types, sizes, and varieties of items.

## The Complete Standards Operation

The complete standards operation includes the establishment and use of effective purchase specifications; a catalog system which identifies, classifies, and numbers the commodities in the supply system; inspection and testing facilities; and basic research

and technical information necessary to the development of standards.

Purchase specifications are standards of quality, design, construction, and performance for materials, supplies, and equipment. The basic objective is a lucid statement describing the commodity required, a statement not open to ambiguity or misinterpretation. Although to accomplish this objective a specification must be accurate, precise, and exact, it should not be worded in language too preclusive and should be as non-restrictive as possible. Restrictive specifications limit sources of supply, and we are only too well aware of the fact that unless widespread competition is obtained, the best quality-price relationship for the purchaser is not secured.

Paradoxically, in terms of value for every dollar spent, a commodity may be too good; it may be of such high quality that it is too expensive for the particular job to be done. For example, a transfile used for shipping documents may be fabricated of many materials. Metal construction is far superior for wear and hard service, yet if the traffic in such documents is not constant, or is temporary in nature, the article made of heavy cardboard and designed for use a few times is far more suited to the job and far more economical.

## Defining Quality

The quality of an article is the sum of a number of describable characteristics such as shape, dimension, composition, strength, workmanship, finish, color, and performance. Some of these characteristics can be expressed in specific and measurable terms; others cannot. When an article has characteristics which cannot be expressed in measurable terms, it is permissible to require that these particular characteristics be equal to a standard prototype sample. However, it should be noted that only those characteristics which are unmeasurable should be specified in this way. Wherever possible, complete and clear specifications, and, if necessary, designs should be furnished. The tendency of modern purchasing is not only away from the use of samples but very definitely avoids trade-name buying, which limits the number of bidders, precludes wide-



Willis S. MacLeod

spread competition, and in some cases induces higher prices for lower quality.

Both the user and the manufacturer of an article are primarily interested in its performance in service. Therefore, the ideal specification is one that places the emphasis upon performance rather than upon composition, physical properties, construction, or methods of manufacture. Some commodities, such as raw materials and steel products, do not lend themselves to the performance type specification, but many other products can most successfully be procured in this way—for example, office machines and numerous other types of equipment.

A complete specification must cover the minimum characteristics of the product, methods of inspection and testing, instructions for packing and marking, and the procedure for the rejection of defective material.

## Developing Specifications

Developing specifications is not an easy task. Certain basic steps should be followed in their preparation:

1. Decide upon the service performance the commodity must give.
2. Make the maximum use of nationally recognized industry and government standards for the product and of manufacturing information and data.
3. Determine whether commercially available products could be used and therefore specified.
4. Make laboratory and field tests, if necessary.
5. Secure comments on the specification from all interested parties—the user, the engineer, the Inspection Department, and manufacturers of the product.
6. Specify only the minimum re-

quirements necessary to obtain the desired performance.

7. The final draft should provide for a product which most economically performs the desired service and causes the least disruption to standard manufacturing processes.

In a small supply organization, of course, it may be necessary to skip some of these steps. It may be impossible, for example, to make laboratory and field tests or to secure comments from an adequate cross section of manufacturers. But test data can be obtained from other users, laboratories and manufacturers. And large or small, it also should be possible for a supply organization to make use of the wealth of reliable standards already in existence.

#### *Identification of Items*

Purchase specifications primarily serve the purchasing officer or the buyer. Cataloging—our second stage—is the means by which all standardization work and all necessary commodity data are brought together to serve as a reference and guide to those engaged in any phase of the supply process. Every good catalog must provide complete and uniform identification, classification, and numbering of each item in the supply system.

Item identification in the broadest sense means the description of each item of supply on a uniform basis so that its identity cannot be confused with any other item—however similar. Item identification consists of the item number, the authorized item name, a description of the characteristics, and other pertinent information such as reference to applicable specifications. As a matter of fact, a complete item identification is usually the equivalent of a specification, and can be used as such.

Commodity classification is the grouping together of related items. Items can be grouped or classed together, for example, on the basis that they serve the same or similar purposes, such as wood or metal file cabinets; that they are used together—component parts of an assembly; that they are obtained from the same suppliers or are made of the same material, for example, various plastic products; or that they require similar conditions of storage, such as moisture and temperature control, fire prevention methods, or special safety precautions.

The purchasing man, of course, is most interested in a guide to suppliers—a commercial register type classification; the warehouseman in classifications geared to conditions of

storage and use; the user in function and purpose. Thus the major problem confronting those engaged in classification work is to develop a system or systems that will serve all the processes of supply. If more than one classification is used they must be correlated and cross indexed.

The purpose of numbering in a commodity catalog is to establish without question the uniqueness of an article and to distinguish it from every other that is nearly identical. Once assigned, no item number should ever be changed. For it is obvious that unless one number always represents one article, the accumulation of information and records under that number is the same as adding apples and pears to arrive at a total of fruit. As such it means nothing.

The greatest single advantage from a uniform commodity catalog is that it provides a common language, and thus a common basis of understanding, for all those engaged in any supply operation. From the time the article is specified, manufactured, procured, delivered, warehoused, distributed, and repaired until the time it reaches the scrap heap, it is clearly and uniformly identified for each man who engages in any part of the handling process.

In addition, the very process of cataloging involves such intensive screening of the items in a supply system that duplicates and unnecessary types and varieties are clearly revealed. Thus inevitably the next step is standardization and simplification.

#### *Definite Advantages*

In storage and distribution, stocking standard items reduces the need for carrying on hand a multitude of different varieties all more or less capable of performing the same function. This in turn reduces the storage space and manpower required. It also lessens the chance of being caught with a large volume of obsolete stock. Positive identification further reduces inventories by eliminating wasteful duplication in stocking the same item under different names, and thus reduces the cost of carrying the inventory. It is important to remember that these advantages are gained in a small stock room as well as in a large warehouse.

Inspection is most commonly thought of as examination of the finished product to determine conformance to specifications. But the inspection function serves many other purposes. Inspection of a manufacturer's plant capacity and facilities,

investigation of his past performance, before award of the contract determines whether he is really able to deliver in the quality and quantity desired. Inspection during production assists the manufacturer to meet his delivery schedules. In addition, if products (especially those of a technical nature) are tested before specifications are developed, you will know that the commodity specified can meet your performance requirements and that its production is feasible from a manufacturing viewpoint.

Items in long term storage should be inspected from time to time to determine if any shelf deterioration has taken place and if they are being stored according to the proper storage conditions.

#### *Need for Research*

This brings me to the last function of the standards operation which I wish to discuss today—the need for research and other technical services for any large scale standardization project. A research staff provides basic information and data for those working in the so-called operating jobs connected with commodity standardization—the development of specifications, the preparation of catalogs, and inspection and testing.

I am well aware that many organizations simply do not have the money or the facilities for a job of this nature. In that case there are many reliable standards already in existence which should be of great service to the comparatively small supply organization. These standards have been prepared by such nationally recognized organizations as the American Standards Association; the American Society for Testing Materials; Underwriters' Laboratories, Inc.; the Illuminating Engineering Society; the Society of Mechanical Engineers; and the National Bureau of Standards, whose "National Directory of Commodity Specifications" is one of the most complete references of its kind in existence.

Also available from the National Bureau of Standards are Simplified Practice Recommendations and Commercial Standards. Standards established under both programs are originated and voluntarily accepted by the industry which produces the product for which a standard is developed.

Although they are prepared for the use of Federal purchasing officers, Federal Specifications may be—and already have been—of great service to state, municipal and industrial purchasing groups. These specifications are developed by some seventy-

(Please turn to page 302)

# When Deceit Becomes Fraud

By Leo T. Parker

**There are varying degrees of misrepresentation affecting the buyer's legal rights.**

**Possession of merchandise is not a valid proof of ownership.**

**Purchaser must rely and act upon the seller's statement to have a case of fraud.**

IT is well known, of course, that a purchaser may sue and recover damages from a seller who fraudulently induced a contract of sale. Also, the purchaser may recover "punitive" damages in addition to the ordinary financial losses he sustained as a result of the seller's fraud.

On the other hand, where a seller simply breaches a contract of sale, the purchaser's recovery of damages is limited to the *actual* financial losses resulting from the breach.

Hence, it is very important that all purchasers know *when* and under what circumstances a seller is guilty of legal fraud, instead of an ordinary breach of a contract.

For example, in case of fraud the court may award extraordinary damages known as punitive damages allowable where the court believes an "example" should be made of a seller who practiced fraud, malice, or deceit on the purchaser. In other words, punitive damages are awarded as additional compensation to the purchaser, and incidentally this additional compensation acts as "punishment" to deter other sellers from offending or defrauding purchasers in a like manner. For illustration, in a case where a seller of an automobile set the speedometer from 90,000 miles back to 20,000 miles, the higher court ordered the seller to take back the car, refund the full purchase price and pay the purchaser \$3,000 punitive damages.

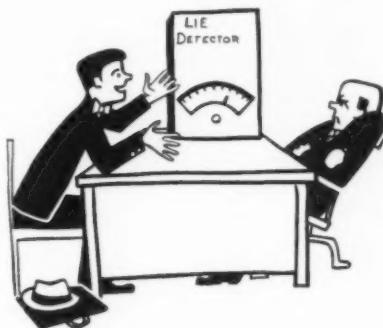
On the other hand, the courts are not likely to allow punitive damages, in addition to ordinary damages, unless the testimony shows conclusively that the seller practised a degree of fraud which is a "tort" or unlawful act *in addition* to a mere deceitful statement.

Hence, if a purchaser simply proves that a seller breached a valid contract of sale he can recover only actual damages. But where the purchaser proves that deceit, fraud, mal-

ice, or similar unlawful influence entered into inducing him to make the contract, the court may hold the seller liable for punitive damages, and then only if the court decides that an "example" should be made of the seller to prevent or deter other sellers from practising the same degree of fraud.

## Ordinary Fraud

A simple and dependable rule to determine whether a seller is guilty of ordinary fraud is: If a seller did *anything* dishonest or deceiving before the contract was made, which induced the purchaser to make the contract



the seller is guilty of fraud. More in detail, this rule may be stated as follows: A seller is guilty of fraud if he made a statement which he knew to be false, deceiving or fraudulent, and the purchaser, believing that such statements were true, relied on them and made the contract.

## No Reliance

A most important legal rule, upheld by all higher courts is: If the purchaser did not rely on fraudulent statements by a seller, the latter is not guilty of fraud. This rule of law is applicable although the seller made deceiving, false and fraudulent statements regarding the merchandise before the sale contract was signed. Thus if the purchaser listened to

these deceiving, false and fraudulent statements and then proceeded to make the contract realizing that the statements made by the seller were intended to deceive and defraud the purchaser, the seller is not guilty of fraud.

Quite obviously, therefore, a seller is not guilty of fraud although he may have made many and various false statements which the purchaser did not hear, or where the seller published false advertising which the purchaser did not read before making the contract.

For illustration, in *Dobbin v. Pacific Coast Coal Company*, 170 Pac. (2d) 642, reported a few weeks ago, the purchaser sued both a contractor and a manufacturer of a heating system for damages. The purchaser proved that the furnace would have to be removed, and some other heating unit installed. He asked the court to award heavy damages plus additional damages to the walls, furniture and fixtures. The purchaser contended that the manufacturer was liable because the contractor distributed circulars which misrepresented the heating unit. Each circular was full of representations such as: "New heating efficiency," "amazing furnace," "less fuel," "ideal for houses," and many others to the general effect that the heating system would be most satisfactory.

The higher court refused to hold either the contractor or manufacturer liable because the purchaser failed to prove that he had read the circulars before he purchased the heating system. This court said:

"There is no evidence whatever that the plaintiff (purchaser) saw the circular. . . It is, therefore, obvious that no finding of fraud could be predicated on any representation even if the circulars were false. Proof of reliance upon a false representation is an indispensable element in a fraud action."

This court also held that no seller is liable for fraud unless the purchaser proves these facts: (1) The seller made a representation of an existing fact; (2) the representation was a falsity; (3) the seller had knowledge of its falsity; (4) the seller intended



that the false representation should be acted on by the purchaser to whom it is made; (5) the purchaser was ignorant of falsity of the representation; (6) the purchaser relied on the truth of the representation, with consequent damage.

Failure of the purchaser to prove all of these facts will result in the seller not being liable for damages, based on fraud, although the merchandise is inefficient in every respect.

#### *When Silence Is Fraud*

All higher courts agreed that silence on the part of a seller may be legal fraud. Not always, and only when in fairness to the prospective purchaser the seller should speak up and prevent the purchaser from being deceived, when the seller realizes that his silence will cause the purchaser to be deceived. In simple words, now approved universally by all higher courts, this is the law:

"Silence, though unaccompanied by any act, may amount to fraud and deceit if the seller knew that by his silence the purchaser would be deceived into purchasing merchandise he would not have purchased if the seller had not remained silent as to the reason the purchaser made his decision to purchase the merchandise."

On the other hand, silence via mail involves different law. In this respect the courts may decide that, notwithstanding contentions to the contrary, either a buyer or seller received a properly addressed letter.

For example, in *Manuel v. Putnam*, 22 So. (2d) 746, the testimony showed facts, as follows: A manufacturer sold to a buyer named Manuel equipment for \$600 to be paid in installments of \$20 per month, with the usual mortgage.

Several weeks after delivery of the equipment, the manufacturer took possession of it claiming that Manuel wrote a letter requesting cancellation of the sale contract.

Manuel sued the manufacturer for damages and admitted that he wrote the letter. He testified that he did not receive an answering letter from the manufacturer and after deciding that the manufacturer would not cancel the contract, he sold the equipment to one White for a large profit. Manuel asked the court to hold the manufacturer liable for damages equal to the profit he would have earned had the manufacturer not repossessed the equipment.

The higher court held the manufacturer not liable in damages to Manuel, and based its decision on two points of law. First, before selling the mill to White, Manuel should not have been certain that he relied on the alleged silence of the manufacturer that he would not cancel the original contract; and second, the court believed the manufacturer's testimony that he had written and mailed Manuel an answering letter cancelling the contract.



Hence, the fact that Manuel did not receive the manufacturer's letter was not important because the court implied that Manuel, the addressee, actually received the properly addressed, stamped and mailed letter.

#### *Damages for Breach*

Under ordinary circumstances a seller is liable to a purchaser for breach of a sale contract in damages equal to the profits the purchaser lost as a result of the breach, plus consequential financial losses. However, unusual circumstances may arise under which a court will hold a seller liable for additional damages for ordinary breach of a contract. For example, the law is well settled that any one who has possession of merchandise which belongs to another must apply to a court for authority to keep it in his possession, or he will be held liable in heavy and unusual damages.

In *Mogul Transp. Company v. Larison*, 181 Pac. (2d) 139, the testimony showed that one Tocco offered by letter to buy from a dealer a specified used motor truck "as is" for \$4,000. Nothing was said whether



er Tocco would pay cash or on credit installment basis. Later Tocco was given possession of the truck by the seller. After considerable controversy the seller wrote a letter to Tocco and demanded full "cash" which Tocco could not pay. Also, Tocco could not give possession of the truck to the seller because it was being held by a garage owner for money due on a repair bill. The seller sued both Tocco and the garage owner for damages.

This court held that Tocco and the garage owner must pay the seller \$5,000 damages, first, because when Tocco took delivery of the truck the law implied that he would pay cash; and second, neither Tocco nor the garage owner had legal right to keep possession of the truck. This court said:

"In such a sale, payment and delivery are concurrent acts. Title to the property does not pass until payment, and if the buyer has taken possession without paying the price, the seller may reclaim the property..."

Within respect to the garage owner, the court held:

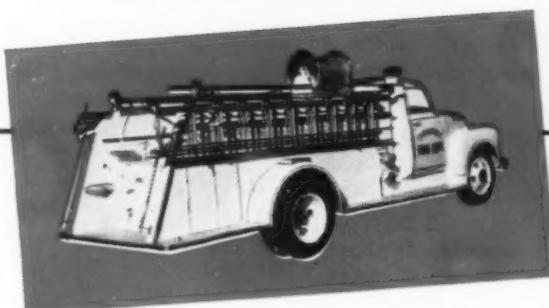
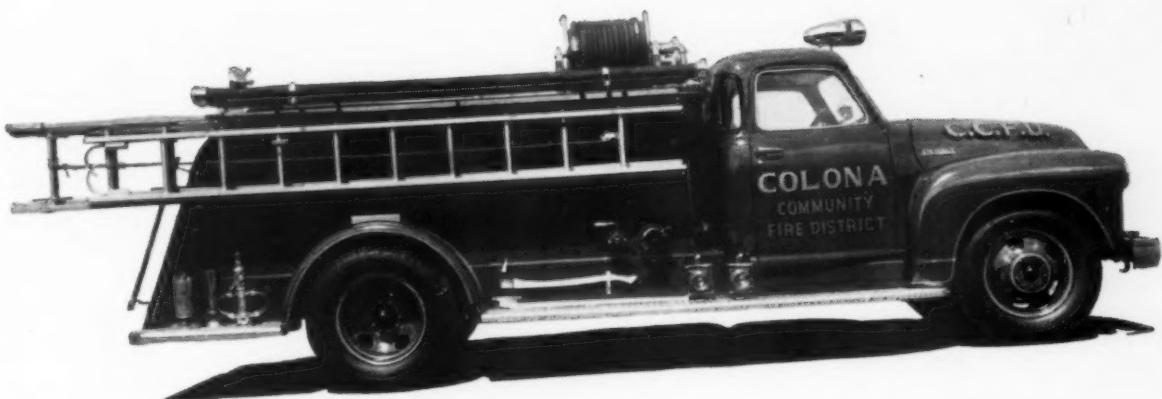
"The Larisons (garage owner) should have offered to bring the property into court to abide its decision. . . Failure on the part of the Larisons to offer to deliver the truck as the court might direct, and to take a court order protecting them in the premises, had the effect of subjecting them to liability to damages for depriving plaintiff of the use of the truck."

This decision was rendered although the garage owner argued that he was innocent of knowingly doing any wrong.

Other circumstances may arise where innocent persons may suffer financial losses.

**"INCREASED EFFICIENCY...DECREASED COSTS  
WITH N-A-X HIGH-TENSILE STEEL"**

Fire Fighter Truck Company, Rock Island, Illinois



Here is what the Fire Fighter Truck Company of Rock Island, Illinois has to say about N-A-X HIGH-TENSILE steel.

"In the use of this steel, we have increased the efficiency of our fire trucks and at the same time decreased our construction costs. We are now permitted to increase the hose carrying capacity using the same gauges as we formerly did with plain hot rolled sheet steel."

"The added strength of N-A-X HIGH-TENSILE permits us to install booster tanks of larger gallonage. The corrosion-resistant properties of the steel has shown to good advantage in that longer life is noted in our booster tank."

"We have found that in applying paint to this steel we can secure a better and longer lasting bond due to its impact- and abrasion-resistant qualities. These same qualities reduce shop imperfections from abrasion and impact, thus reducing surface refinishing prior to painting."

The high physical properties of N-A-X HIGH-TENSILE steel can help you increase your production . . . improve your product . . . reduce your fabricating costs.

**GREAT LAKES STEEL CORPORATION**

N-A-X ALLOY DIVISION • DETROIT 18, MICHIGAN  
UNIT OF NATIONAL STEEL CORPORATION



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GREAT LAKES STEEL CORP.

According to a recent higher court, the owner of merchandise may sue and recover it from a purchaser who bought it from a party in possession, if the purchaser fails to prove that the one in possession of the merchandise had authority of the owner to sell it.

For example, in *Trinity v. Price*, 205 S. W. (2d) 62, it was shown that a purchaser of merchandise from a seller named Price did not know that it belonged to a finance company. Later he contended that since Price had possession of the merchandise he could legally sell it. The higher court refused to agree with this contention, saying:

"The mere possession of property of another does not give the possessor the right to deal with such property as he sees fit."

Also, see *United States v. Parfait Powder Puff Company, Inc.*, 163 Fed. (2d) 1008, reported February, 1948, where the testimony showed facts, as follows: A manufacturer entered into a contract with Helfrich Laboratories under which the latter agreed to manufacture and pack specified pads for the manufacturer and impregnate the pads with a shellac lacquer. Without the manufacturer's knowledge, Helfrich substituted an ordinary gum for shellac in the lacquer for the reason that shellac was impossible to obtain. This gum proved to be deleterious in use.

The government sued the manufacturer and the lower court held the latter liable in heavy penalties for violating the Food, Drug and Cosmetic Act. The manufacturer defended the suit on the grounds the violation was not its own but that of Helfrich. It argued that Helfrich was an independent contractor for whose acts it is not responsible. However, the higher court approved the lower court's verdict, saying:

"It is clear that defendant (manufacturer) was engaged in procuring the manufacture and distribution of the article in interstate commerce. It saw fit to create out of Helfrich's activities in its behalf an instrumentality which effected an introduction into commerce of an adulterated article violative of the standards fixed by the Act. This we think it could not do without incurring the criminal penalty imposed by the statute. The liability was not incurred because defendant (manufacturer) consciously participated in the wrongful act, but because the instrumentality violated the law."

Also, see *United States v. Dotterweich*, 320 U.S. 277. The Supreme Court of the United States said:

"The offense is committed . . . by all who do have such a responsible share in the furtherance of the transaction which the statute outlaws. The person who brings goods into commerce, by whatever means or implements, is bound to see that the commodity thus put in commerce is not beyond the pale of the legislative act."

For further comparison as to an innocent person suffering financial losses see *Mossler Corporation v. Naquin*, 30 So. (2d) 766. Here a chattel mortgage on a motor truck was executed and the note signed by a purchaser named Frank who resided in the City of New Orleans, Louisiana. The mortgage was recorded in the mortgage records of the County of Orleans. Three months later Frank sold the truck to William A. Richardson, who shortly afterwards sold it to one West, who later sold the truck to Peter Naquin.



The seller in Louisiana sued Peter Naquin to recover possession of the truck. Both Naquin and West contended that the seller could not recover possession of the truck because the mortgage was not recorded in the county or state where the truck was last sold. Nevertheless the higher court awarded the seller custody of the truck and said:

"Naquin avers that at the time he bought the car he had no knowledge of any outstanding mortgage bearing on it and, on information, alleges that none existed. . . Filing and recordation of chattel mortgage in a county of chattel's location and that of mortgagor's domicile gives mortgage effect in all other counties."

#### Reasonably Prudent

According to a recent higher court an owner of equipment who through negligence permits another to get possession of it, and then does not promptly assert his ownership, may be deprived of regaining possession of the equipment.

For example, in *Rice v. Galkow*, 77 N. E. (2d) 889, it was shown that one Rice delivered equipment to one White with apparent power to dis-

pose of it by giving White a certificate of title. Later White sold the equipment to Galkow and with the knowledge of Rice delivered to Galkow the title certificate with Rice's purported signature acknowledged by a notary to an assignment on the reverse side.

Sometime later Rice sued Galkow to get possession of the equipment, claiming that he was the legal owner, since White had not fulfilled the purchase agreement.

The higher court refused to award the equipment to Rice, saying that Galkow was reasonably prudent, so as to preclude Rice from asserting ownership of the equipment as against Galkow.

This court also indicated that Rice may have been entitled to take possession of the equipment from Galkow if the testimony had shown that Rice had notified Galkow that White was not the lawful and legal owner of it.

Of course, the law laid down by this higher court is not applicable if the owner had had a properly recorded mortgage on the equipment. Under these latter circumstances, mere possession of the equipment would result in no valid title, because a legally recorded mortgage in the county in which equipment is situated is valid and legal notice to all persons in all states in the United States that the equipment is mortgaged.

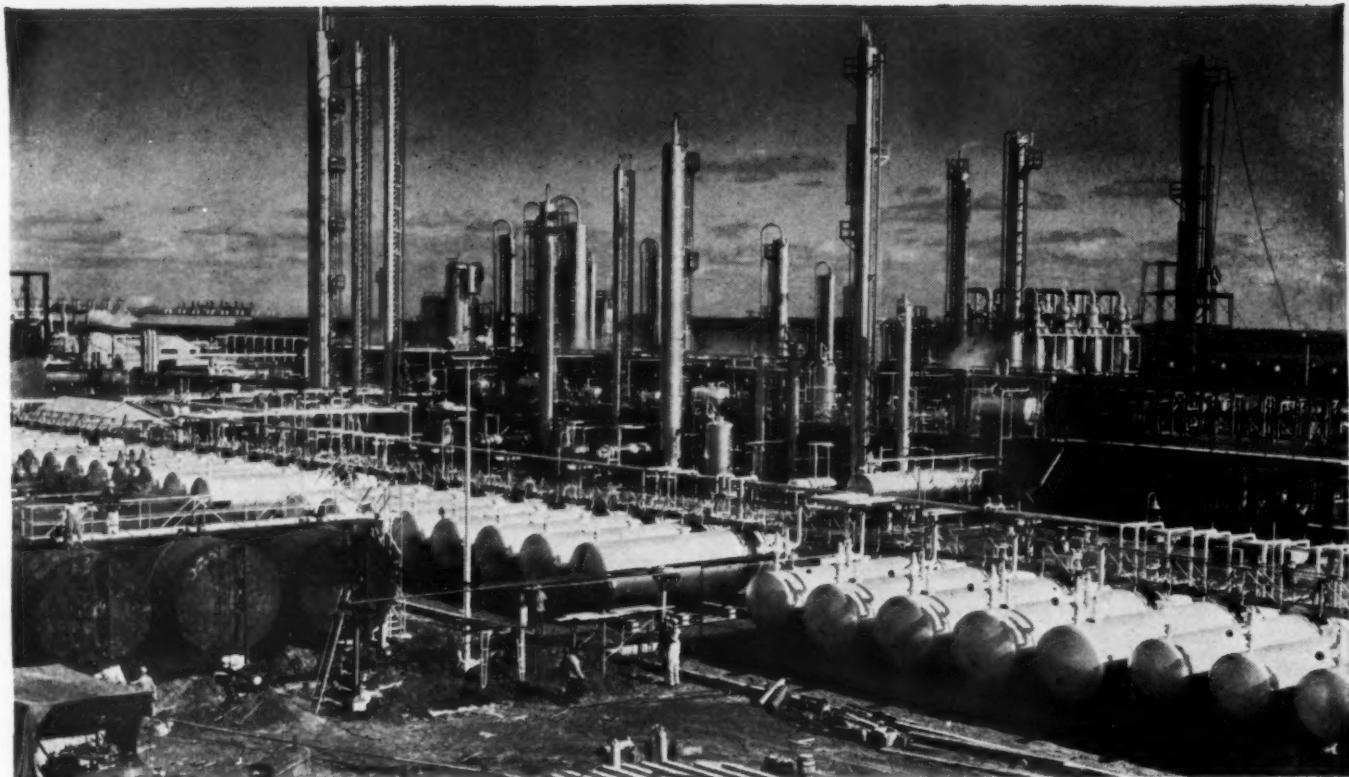
#### Purchasing Agent Absconds

In *Hurst Company v. Ledford*, 268 S. W. 1090, the higher court held that where one of two innocent parties must suffer financial loss through acts of a purchasing agent, the loss should fall upon the one who authorized the agent to perform the act.

For example, in *Tennessee Gas Company v. Cooke Automobile Company*, 206 S. W. (2d) 491, reported March, 1948, the testimony showed that the Tennessee Gas Company authorized its purchasing agent named Lerch to purchase several automobiles from the Cooke Automobile Company. Several purchases were made by Lerch. Generally the cars were delivered on the same day they were sold to Lerch, and purchase orders were not sent in by the gas company until long after delivery of the cars had been accepted.

One day Lerch came into the automobile company's office and bought eight motor trucks and stated that he wished to purchase an additional Cadillac. Lerch told the automobile company's manager that he wanted the Cadillac for one of the officials of

(Please turn to page 298)



Sectional view of the Chemcel Plant, Bishop, Texas.

## CHEMCEL *geared to Industry*

At its Chemcel plant, near Corpus Christi, Texas, Celanese has incorporated the most advanced engineering techniques for synthesizing organic chemicals from petroleum gases. The result is a flexible plant that can be geared readily to the changing needs of chemical markets. Tank cars carry vital organic compounds daily from Chemcel to industries throughout the nation. This past year, with the completion of storage terminals at Corpus Christi and New Haven, Celanese inaugurated the first tanker movements of formaldehyde—from Chemcel to New England.

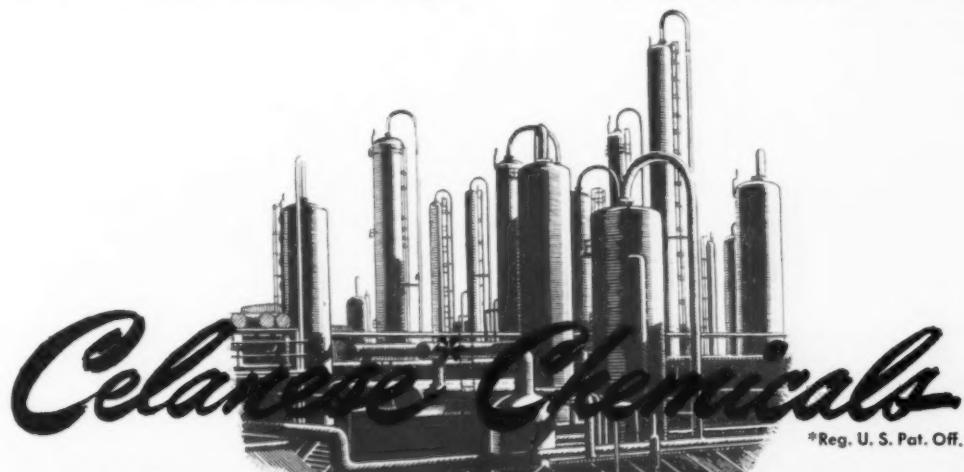
While serving today's chemical markets, Celanese keeps an eye to the future through its intensive research program. Begun 16 years ago, this program has resulted in the production of an expanding group of important commercial compounds and new chemicals. Another achievement is repre-

sented by the recent completion of the Celanese Petroleum Chemicals Research and Development Laboratory at Clarkwood, Texas. Here, engineers and skilled technicians are working continuously to improve plant processes, to find new applications for current Celanese Chemicals and to develop additional compounds for production at Chemcel.

Celanese is a major producer of formaldehyde, acetaldehyde, methanol, acetone, acetic acid and other organic chemicals. Write for the latest brochure describing these Celanese Chemicals. And, for the organic compounds you need now and will need, look to Celanese.

CELANESE CORPORATION OF AMERICA  
Chemical Division

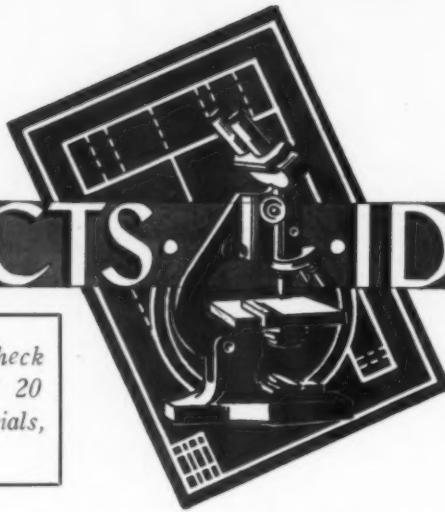
180 Madison Avenue, New York 16, N. Y.



ALCOHOLS • ALDEHYDES • GLYCOLS • KETONES • ACIDS • SOLVENTS • PLASTICIZERS

# New PRODUCTS & IDEAS

Purchasing Agents and their Assistants are invited to check the pre-paid "Ask Purch" postcards on Pages 19 and 20 for late catalogs and bulletins on New Products, Materials, Finishes, Equipment, etc.



## 3-KW PREHEATER



NEW 3-kw., 40-megacycle preheater for rapid and uniform preheating of plastic preforms operates on 230 volts, single phase, 60 cycles. It will heat 40 oz of wood-flour phenolic compound from 70F to 250F

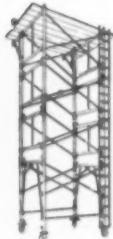
in one minute, or one pound of the material in 24 seconds. The preheater requires only 2½ sq ft of floor space. It has an automatic "pop-up" cover which facilitates preform loading and unloading. Bulletin GEA-5091 available. General Electric Company, Schenectady 5, N. Y.

## GENTLE WATERLESS HAND CLEANER

WATERLESS hand-cleaner called "Little Doc Disololivit" removes grease, dirt and grime from hands

in one application. It contains Lanolin, a soothing substance which protects sensitive skins, and is free from skin-drying ammonia. After the material has been rubbed in by hand motion, it is wiped off with a dry cloth. Available in pints, quarts, gallons and five gallons. Schaffner Industries, Inc., Pittsburgh 2, Pa.

## TUBULAR STEEL SCAFFOLD



ADVANCE steel scaffold frames are double welded at the girt joints and the joining cross braces have the feature of a cam lock for fast and positive assembly and fast knock-down. No clamps, nuts, bolts, or toggle pins. The scaffold is engineered for a load of 50 lbs. per sq. ft. on 7-ft. spans, at a height of 125 ft. with a safety factor of 4. Suitable for structural, masonry, siding, painting or maintenance jobs. Advance Scaffold Divn., Beaver Art Metal Corp., Box 792, Ellwood City, Pa.

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## PROTECTING SOLUTION FOR USE IN PLATING SHOP

LEATARDENT is a protecting solution for use in the plating shop to prevent water staining and tarnishing of nickel plated work, brass work, and, to some extent, copper, prior to operations such as lacquering, packing, plating, assembly, etc. Once treated with the solution, an article can be kept a few days until ready for lacquering without danger of tarnishing. Available in 5-gal. cans and 50-gal. drums. Lea Manufacturing Co., Waterbury 86, Conn.

## PORTABLE PIPE BENDER



LIGHTWEIGHT (combined weight of the jack and frame is 83 lbs.) portable hydraulic pipe bender has open jaw construction which speeds up production. Removable hydraulic jack can be used for other purposes. Thirty-inch steel frame is electrically welded and heavily reinforced, comes complete with ¾", 1", 1¼", 2", and 2½" dies. Electric Cord Co., 30 Church Street, New York 7, N. Y.

## SURFACE TREATING CHEMICAL FOR ALUMINUM

"ALODINE" is a surface treating chemical for aluminum which produces a protective coating in 2 minutes or less, it is claimed. The chemical can be applied by dipping, spraying (in a power washer), or brushing the aluminum parts. Compares favorably in ability to anchor paint and stop corrosion with best surfaces produced in complicated processes, maker states. American Chemical Paint Co., Brookside Avenue, Ambler, Pa.

## SPONGE RUBBER CUTTER

NO. 99 sponge rubber cutter is for use on sponge or foam rubber up to 4" thick. Operator can follow any pattern marked out, or follow a template, for cutting straight lines, curves, or angles. The machine can be operated at a speed of 30 feet per minute, depending on thickness of material. Powered by universal type motor that operates from a-c or d-c. Motor housing is a light-weight aluminum alloy casting. Stanley Electric Tools, New Britain, Conn.

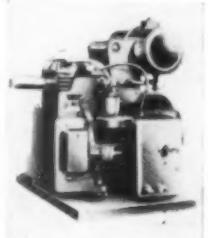


## DEVICE FOR HANDLING PIECE GOODS

"EAS-OUT" device for handling of piece goods is made of light-weight metal, with serrated chrome steel grippers to give firm grip on the inside of a tube of goods, and to prevent slipping. The device is inserted into the end of the tube, and the roll is pulled out easily, maker states, whether it is in the middle, bottom, or any part of the stack. Cutting Room Appliances Corp., 45 West 25th St., New York, N. Y.

## 77-POUND ELECTRIC PLANT

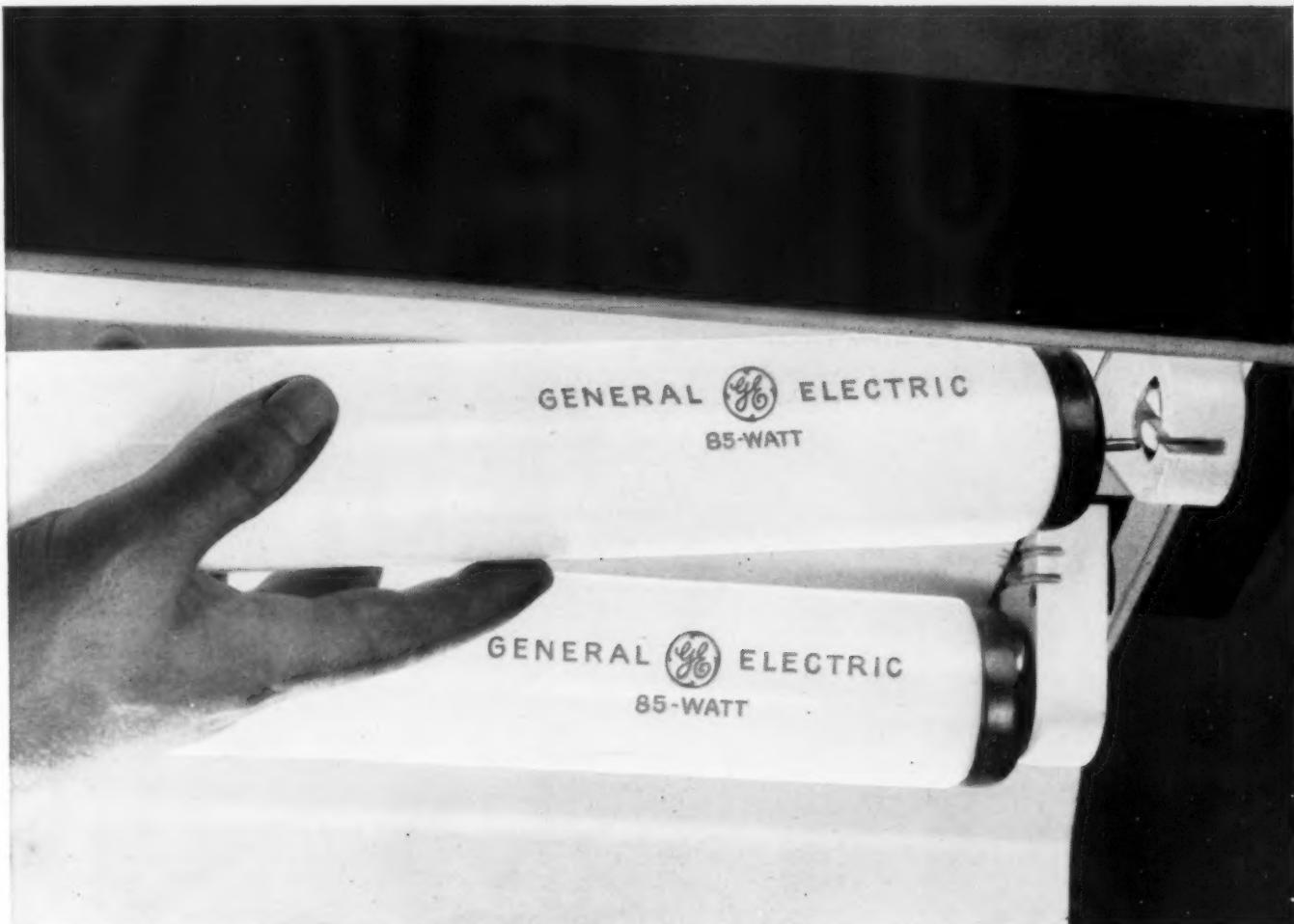
THIS small, light, four-cycle, engine-driven a-c lighting plant (77 lbs.) generates 350 watts alternating current, and is less than 2 cu. ft. in size. Known as Model AAE, it is available in both 115-volt a-c models and in 6, 12 and 32-volt d-c battery charges. It can be hooked up to any automobile battery for starting. Powered by a 4-cycle, air-cooled Onan engine of cast-iron construction. D. W. Onan & Sons, Inc., Minneapolis 5, Minn.



(Please turn to page 150)

# NOW 85=100!

(in this fluorescent lamp)



## New G-E 85-watt fluorescent lamp gives same light output as 100-watt

ONCE again General Electric helps you to get more light for your money! Designed for use with existing 100-watt equipment, the new G-E 85-watt fluorescent lamp gives the same long life and the same high light output as the old 100-watt lamp it replaces.

Increased efficiency results from the use of krypton, a rare gas occurring in air to the extent of about

one part in one million. Successful use of this gas is another triumph of G-E research.

Ask for the new G-E 85-watt lamps when you're ordering replacements for worn-out 100-watt lamps. Take advantage of their higher efficiency when planning new installations—use more lamps to give higher lighting levels without increasing your lighting costs!

**G-E LAMPS**  
**GENERAL ELECTRIC**

*For the first time ever!*  
**GET ALL THE**  
  
**FLUORESCENT  
LAMPS YOU WANT!**

Now's the time to fill those empty sockets, replace worn-out lamps and go ahead with lighting modernization. See your supplier today!

## CHECKING FIXTURE



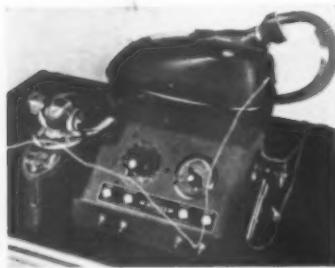
UNIVERSAL "Sine-Line" checking fixture for checking gears, gear blanks, hobs, worms, worm blanks, milling cutters and form tools up to 10" OD and 8" maximum face width is designated Michigan Model 471-A. Standard indicator assemblies furnished with this model allow checking of tooth spacing, pitch radius, concentricity, and taper of spur and helical gears. They will also check the outside radius and concentricity of gear and worm blanks. Additional indicator assemblies for other types of checking also available. *Michigan Tool Co., 7171 E. McNichols Road, Detroit 12, Mich.*

Indicator assemblies furnished with this model allow checking of tooth spacing, pitch radius, concentricity, and taper of spur and helical gears. They will also check the outside radius and concentricity of gear and worm blanks. Additional indicator assemblies for other types of checking also available. *Michigan Tool Co., 7171 E. McNichols Road, Detroit 12, Mich.*

## SOFT HAMMERS FEATURE SAFETY AND STRENGTH

SOFT HAMMERS feature strength and security of steel, with balance, light weight and firm grip found in wooden handles. The head of homogeneous brass or copper casting, which will mushroom but does not fracture, is molded on the end of the handle and crimped into a butterfly to eliminate the need of wedges. Hammers are available with either type head in  $\frac{1}{2}$ , 1,  $1\frac{1}{2}$ , 2,  $2\frac{1}{2}$ , 3, 4, 5 and 6 lb. sizes. *Univeritcal Machine Co., Box 144, Route #2, 14831 W. 11 Mile Rd., Royal Oak, Mich.*

## ABRASION TESTING SET



MODEL No. 100-109 is an abrasion testing set incorporating a rotary abrading action on a 4" specimen. The wear results from alternately rubbing the flat faces of two resilient Calibrase wheels over the surface being tested. A range of standardized abrasive wheels are available for testing all types of surface finishes including electroplate, porcelain enamel, leather, glass, plastics and woven textile fabrics. Unit has a suction pump with vertical dust receiver with swinging nozzle adjustable for any thickness specimen. Control unit is equipped for dual operation. *Taber Instrument Corp., Dept. P, 111 Goundry St., North Tonawanda, N. Y.*

## LIGHTWEIGHT ECONOMY POWER SHEARS

THREE models of power squaring shears—36", 42", and 52"—are described as offering low initial cost and economy of operation after installation. They are capable of cutting 18 gauge stock easily and rapidly. Inlaid, precision-ground, high carbon tool steel blades are furnished as standard equipment, as are adjustable front and back gauges, hold-downs and guards. The shears have special single stroke mechanisms which can be set for continuous operation. *Famco Machine Co., Racine, Wis.*

## SINGLE AC-DC WELDING UNIT

COMPACT unit known as the Duell-Tronic combination combination d-c—a-c welder that can be set for d-c or a-c operation simply by setting two switches and a hand lever. Easy striking and stable arc, combined with accurate amperage control, are said to make the d-c welder ideal for use on applications requiring the inert gas shielded arc welding process. The machine's a-c welding characteristics are said to include smooth, instant starting and stable arc action and quiet, vibration-free operation. *John A. Kern Co., 224 N. Loomis St., Chicago 7, Ill.*

## QUICK- DRYING TRAFFIC PAINT

LONG-wearing traffic paint for marking factory aisle border lines, pull-out and storage areas, danger zones, outdoor parking lines, etc. dries in approximately five minutes at 75° F or over. It can be sprayed on with marking equipment and comes in Federal Yellow, Traffic White, and Traffic Black. Paint is said to stay on for a long time and to retain brightness of color under heavy conditions. *Lowebco, Inc., 1525 East 53rd St., Chicago 15, Ill.*

## PLATFORM FOR LADDER RUNGS

THIS platform, made to fit any standard rung ladder, frees both hands for the job. It has a firm, treaded foot surface which is adjustable to maintain a horizontal plane, no matter what the incline angle of the ladder. The 10 $\frac{3}{4}$ " x 8 $\frac{1}{2}$ " platform of  $\frac{3}{4}$ " hard-wood is bolted to brackets of cast aluminum with a tensile strength of 21,000 pounds per square inch. The platform is equipped with 5" x 8" of tread material to prevent foot slippage and a hand slot for carrying. *Beauideal, Inc., 901 S. Water St., Saginaw, Mich.*

## STRAIGHT SIDE PRESSES

ILLUSTRATION shows one of a line of all welded straight side presses, both the single and double crank variety. This machine is a double crank single geared tie rod frame press having a rated capacity near bottom

stroke of 185 tons. With both single and double geared machines the high speed shaft and flywheel with electro-pneumatic clutch is mounted within the crown above the crankshaft. Air counterbalance for the slide operates the compact design which saves space and improves the operating characteristics. *Niagara Machine & Tool Works, 637 Northland Avenue, Buffalo 11, N. Y.*



## LABEL CEMENT HOLDS TO FROZEN FOOD CONTAINERS

PAISLEY label cement #1705 is a compounded synthetic rubber cement for use in labeling tin cans, metal pails, etc. that are later subjected to subzero freezer temperatures. It is claimed that labels put on in 35°F room, then subjected to subzero freezer storage for 30 to 90 days, hold securely when defrosted. It is white in color, can be diluted with water, and dries rapidly to a transparent, tenacious, flexible, water resistant adhesive film. Will hold to various surfaces, smooth or porous. Laboratory report and testing sample available. *Paisley Products, Inc., 1770 Canalport Avenue, Chicago, Ill., or 630 West 51st Street, New York 19, N. Y.*

## POLISHER AND SANDER



LIGHT (2 $\frac{1}{2}$  lbs.) and compact (sandpaper pad measures 2 $\frac{1}{4}$ " x 5 $\frac{1}{2}$ ") combination sander and polisher is useful for tight corners and other inaccessible places. It delivers about 7,200 short strokes a minute, freeing sandpaper of excessive dust. Cam-type clamp paper holder permits changing sandpaper in seconds. Machine has only two moving parts, never requires oiling or adjustment. Operates on 110-120 volt, 60-cycle a-c electric current (only). Equipment includes 8 ft. rubber cord plus assorted grades of Garnet paper for sanding, and a felt pad and sheepskin. *Dremel Manufacturing Co., Racine, Wis.*

(Please turn to page 152)

# *Electrolytic Tin Plate Quality*

## PRECISION CONTROLLED



Precision controls insure electrolytic tin plate quality. They are directly responsible for sure protection of the goodness of fine food products.

Two electrolytic tin plate lines operating in Youngstown Plant

# Youngstown

## ELECTROLYTIC TIN PLATE

THE YOUNGSTOWN SHEET AND TUBE COMPANY

Manufacturers of Carbon, Alloy and Tool Steel

General Offices — Youngstown 1, Ohio

Export Office - 500 Fifth Avenue, New York

ELECTROLYTIC TIN PLATE - WIRE - COLD FINISHED CARBON AND ALLOY BARS - PIPE AND TUBULAR PRODUCTS - CONDUIT - RODS - SHEETS - PLATES - BARS - COKE TIN PLATE - RAILROAD TRACK SPIKES.

# SAVE

- MATERIALS
- MAN-HOURS
- MONEY

with the . . .

## RIGHT RIVETS

Select exactly the right semi-tubular, split rivet, or cold-headed fastener from Milford's complete line. You'll find it pays in every way!

## RIGHT MACHINE

Then use the right rivet setting machine for your application. One of Milford's 15 basic machines is sure to solve your particular problem . . . and slash your production costs!

Write to Dept. B

**PENN RIVET & MACHINE COMPANY**  
254 Huntingdon Street  
PHILADELPHIA 33, PENN.

### CONVEYOR TAKE-UP



TYPE H take-up for general conveyor and elevator service is rugged in construction and compact in design. Welded steel frame provides strength and rigidity without excess weight. The bearings are babbitted, faced on ends and equipped with standard pressure fittings. Load on bearing may be applied in either direction. Positive adjustment of take-up is effected by turning screw heads at either end. Adjusting screws are plated and the angle top member protects screw from dust and dirt. *Dodge Manufacturing Corp., Mishawaka, Ind.*

### SIMPLICITY FEATURE OF SOAP DISPENSER

dispenses it and returns to loading position as pressure on operating lever is released. The dispenser is filled through a perforated diaphragm which prevents pilfering even though device has no lock or catches. Excessive humidity does not cause caking or clogging. Spiral wire agitator attached to the operating plunger prevents "bridging". *Central Products Co., 214 W. Ohio St., Chicago 10, Ill.*

### DRY-TYPE DISTRIBUTION TRANSFORMERS



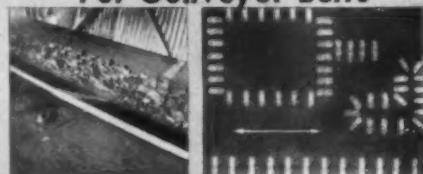
TWO types each of single-phase and three-phase dry-type distribution transformers, for providing specific voltages where required for auxiliary lighting and power circuits, have been announced. Two-winding dry-type transformers are built as single-phase type AE, in sizes 250 va to 200 kva, and as three-phase type AP, in sizes 3 to 300 kva, in the 600 volt class and below. Dry-type auto transformers are built as single-phase type AA, in sizes 500 va to 25 kva, and as three-phase type AM, in sizes 5 to 50 kva, both types 240 to 240/120 volts. All have class A insulation, and are rated 55°C. rise continuous duty. *Wagner Electric Corp., 6400 Plymouth Avenue, St. Louis 14, Mo.*

(Please turn to page 154)

### Present Day Practice in Belt Fastening

Every man who has anything to do with the purchase, application or maintenance of conveyor, transmission or V-belts will find the bulletins listed below of considerable value in connection with belt fastening work. A knowledge of present day practice in belt fastening helps reduce the loss in machine hours due to belt failures caused by the use of the wrong type of fastener or improper application. We shall be glad to send any or all of them to you or to any of the men in your organization.

#### For Conveyor Belts



**FLEXCO HD Belt Fasteners** are used to make a "water-tight" butt joint in conveyor belts ranging from  $\frac{1}{4}$ " to  $1\frac{1}{2}$ " thick and of any width. The view on the right shows the various types of rips that can be repaired with these fasteners and Flexco HD Rip Plates.

Bulletin F-100 gives complete details on how to fasten and repair conveyor belts.

#### For V-Belts

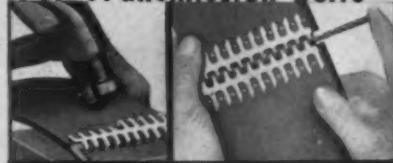


**ALLIGATOR Y-Belt Fasteners** are now being widely used to fasten B, C and D, open-end V-beltting of cross woven fabric core construction now being made by most belting manufacturers. The view at the left shows a typical application of these fasteners to a drive where endless V-belts would require dismantling the machinery to put the belts on the sheaves.

Bulletin V-205 gives complete instructions on how to use V-belt fasteners.

**FLEX Y Fasteners** for A and B belts are also available for lighter duty V-belt drives. Ask for Bulletin Y-14.

#### For Transmission Belts



**ALLIGATOR Steel Belt Lacing** is in worldwide use to make smooth, flexible joints in leather, rubber, balata, stitched canvas or solid woven belts up to  $\frac{3}{8}$ " thick and as wide as they come.

Bulletin A-60 tells how to fasten and repair transmission belts.

Sold by Supply Houses Everywhere

**FLEXIBLE STEEL LACING COMPANY**  
4697 Lexington Street, Chicago 44, Ill.



#### **3M Sales Offices and Warehouses at:**

- |                           |   |
|---------------------------|---|
| ATLANTA, GEORGIA          | 131 Carnegie Way, Room 922                        |
| BOSTON 10, MASS.          | 51 Sleeper St.                                    |
| BUFFALO 3, NEW YORK       | 210 Ellicott St.                                  |
| CHICAGO 8, ILL.           | 1500 South Western Ave.                           |
| CINCINNATI 2, OHIO        | c/o Cincinnati Terminal Whse.,<br>49 Central Ave. |
| CLEVELAND 13, OHIO        | 1200-1220 W. Ninth St.                            |
| DALLAS 1, TEXAS           | 212 South St. Paul St.                            |
| DENVER, COLO.             | 202 Sugar Bldg.                                   |
| DETROIT 2, MICH.          | 411 Piquette Ave.                                 |
| GRAND RAPIDS, MICH.       | 505 W. Fulton St.                                 |
| HIGH POINT, N. C.         | 1501 South Main St.                               |
| NEW YORK 13, N. Y.        | 155 Avenue of the Americas                        |
| PHILADELPHIA 8, PA.       | 401 North Broad Street                            |
| PITTSBURGH 19, PA.        | 911 Plaza Building                                |
| ST. LOUIS 8, MO.          | 3700 Forest Park Blvd.                            |
| ST. PAUL 1 (SALES OFFICE) | 367 Grove St.                                     |
| LOS ANGELES 22, CALIF.    | 6411 Randolph St.                                 |
| SAN FRANCISCO 10, CALIF.  | 450 Alabama St.                                   |
| SEATTLE 4, WASH.          | 1242 Sixth Avenue, South                          |

#### **Other 3M Factories at:**

- |                       |                         |
|-----------------------|-------------------------|
| HUTCHINSON, MINNESOTA | COPLEY, OHIO            |
| LITTLE ROCK, ARKANSAS | DETROIT, MICHIGAN       |
| FAIRMONT, MINNESOTA   | WAUSAU, WISCONSIN       |
| DULUTH, MINNESOTA     | LOS ANGELES, CALIFORNIA |
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| CORONA, CALIFORNIA    |                         |
- EXPORT**

DUREX ABRASIVES CORP.      63 Wall St., New York 5, N. Y.  
 CANADIAN DUREX ABRASIVES LTD.,      Brantford, Ontario

*We manufacture*

#### **Under the 3M brand:**

- 3M Abrasive Paper and Cloth
- 3M Adhesives—rubber or resin base
- 3M Roofing Granules
- 3M Iron Oxide and Chrome Oxide Pigments
- 3M Floor Seal
- 3M Fibre Packing
- 3M Silane
- 3M Anti-Corrosion Coating

#### **Under the "Scotch" brand:**

- "Scotch" Cellulose Tape
- "Scotch" Masking Tape
- "Scotch" Electrical Tape
- "Scotch" Locker Tape
- "Scotch" Shoe Tape
- "Scotch" Plastic Film Tape
- "Scotch" Electroplating Tape
- "Scotch" Decorators Tape
- "Scotch" Sound Recording Tape

#### **Other 3M Products include:**

- "Scotchlite" Reflective Sheeting
- "Spherekote" Tympan Paper
- "Honite" Abrasive Pebbles
- "Mistlon" Plastic Ribbon
- "Underseal" Rubberized Coating for car underbodies
- "Safety-Walk" Non-Slip Surfacing
- "Scotch-Weld" Bonding Film
- "Scotch Top" Plastic Wall
- "Poro-cel" Hospital Sheeting



**MINNESOTA MINING & MFG. CO.**

Saint Paul 6, Minn.

**for**  
**STEEL-SHEET**  
**PILING**  
 and light-weight.  
 corrugated piling

**RAILS**  
 and  
 TRACK  
 ACCESSORIES



✓ WRITE  
 ✓ WIRE  
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**1 TON OR 1000**

EVERY SINGLE ITEM AS SHIPPED BY FOSTER IS  
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ADDRESS THE FOSTER OFFICE NEAREST YOU

**FLUORESCENT INDUSTRIAL UNIT**



SLIMLINE fluorescent industrial unit for heavy duty has a one-piece top channel of heavy gauge steel, finished in gray baked enamel to match top side of reflector. Slide-grip hanger groove runs entire length of the unit and permits wide versatility of installation. New lock construction permits split second assembly or disassembly of reflector from hood. Safety spring action keeps lamps from falling because of vibration. Reflectors come in either life-time porcelain-enamel or baked enamel finish. Bright Light Reflector Co., Fairfield & State Sts., Bridgeport, Conn.

**ONE-MAN  
 BELT  
 SLITTING  
 DEVICE**

After the cutting blade and the guide are locked in position, the belt is simply pulled through by hand. It is a one-man operation. Cutting edge is a standard razor blade, reinforced by a holder from which it can easily be removed and replaced. Hold-down rollers keep the belt from buckling, and an adjustable guide assures uniform widths. Beltuf Belting Co., 3773 Las Flores Court, Los Angeles 34, Calif.

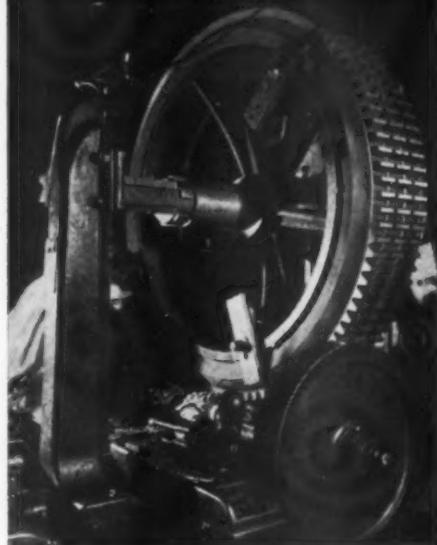
**POWER BELT CONVEYOR**



PRE-ENGINEERED power belt conveyor, named "Power-Veyor", is designed for horizontal application in handling cartons, boxes, bags, parts, etc. The unit is available in belt widths of 8", 12", 14", and 20", and is built for permanent or semi-permanent installation. It is suited best to fill the need for a horizontal belt conveyor in lengths up to 150 ft., according to the maker. Motors available are specified according to the length and width of the unit and load to be carried. The Rapids-Standard Company, Inc., Dept. P-229, 342 Rapistan Bldg., Grand Rapids 2, Mich.

(Please turn to page 156)

**LARGE  
 CUT GEARS**



Cutting three identical spur gears simultaneously at Simonds Gear.

**Cut Gears  
 for Industrial Needs!**

For special gears in larger sizes—exact duplicate gears for replacements—for every heavy-duty industrial gear application—look to SIMONDS GEAR where specialty gears for heavy industry have been a custom service for more than 50 years. Within easy shipping distance of many heavy industry plants—with a personalized service designed to meet your most exacting specifications—SIMONDS GEAR provides an unusually prompt and efficient service on even the most unusual gear requirements. Sizes range up to 145" dia. in all popular gear-making materials. Send your inquiry today and get acquainted with SIMONDS GEAR Service.

**SPUR GEARS**  
**BEVEL GEARS** • **MITRE GEARS**  
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**RACKS** • **PINIONS**

Stock carrying distributors for Ramsey Silent Chain Drives and Couplings. V-Belts.



**THE  
 SIMONDS  
 GEAR & MFG. CO.**

LIBERTY at 25TH PITTSBURGH 22, PA.

# BENDIX-SCINTILLA

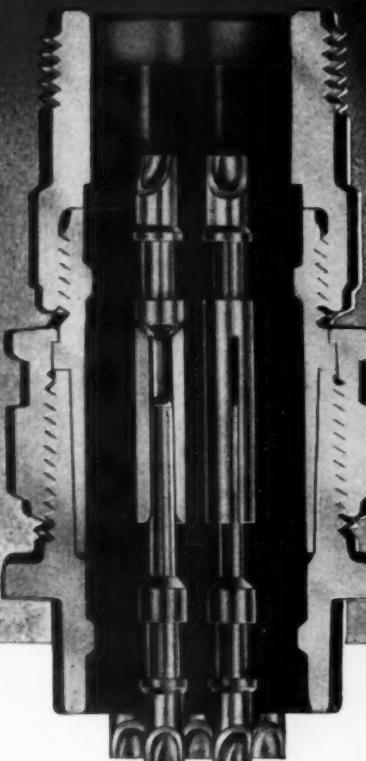
## ELECTRICAL CONNECTORS

*the finest  
money can buy!*

*these are the features THAT HAVE  
MADE IT THE QUALITY CONNECTOR*

- Moisture-proof, Pressure-tight
- Radio Quiet
- Single-piece Inserts
- Vibration-proof

- Light Weight
- High Arc Resistance
- Easy Assembly and Disassembly
- Fewer Parts than any other Connector

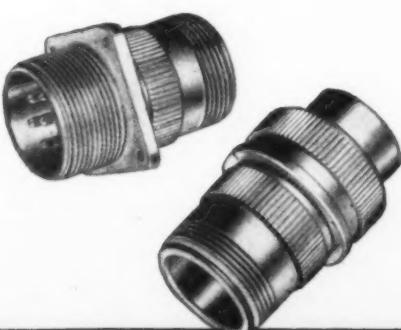


*Plus this Important Advantage—  
PRACTICALLY NO VOLTAGE DROP!*

Contacts that carry maximum currents with a minimum voltage drop are only part of the many new advantages you get with Bendix-Scintilla\* Electrical Connectors. The use of "Scinflex" dielectric material, an exclusive new Bendix-Scintilla development of outstanding stability, increases resistance to flashover and creepage. In temperature extremes, from -67° F. to +300° F., performance is remarkable. Dielectric strength is never less than 300 volts per mil. Bendix-Scintilla Connectors have fewer parts than any other connector on the market—and that means lower maintenance costs and better performance.

\*TRADEMARK

*Available in all Standard A.N. Contact Configurations.  
Write our Sales Department for detailed information.*



**BENDIX  
SCINTILLA**

SCINTILLA MAGNETO DIVISION of  
SIDNEY, NEW YORK





## WANT TO MAKE SOMETHING OF IT?

Pictured above is a tube of Taylor Laminated Phenol Fibre, just as it comes from our production line.

Pictured below is a coil form . . . quickly fabricated from this same tube. Note the precision of the punching and threading.

Sheets, rods, and tubes of Taylor Laminated Plastics possess so many properties, physical and electrical, of interest to industry . . . and adapt themselves to such a variety of fabrication processes . . . that their usefulness grows and grows and grows.

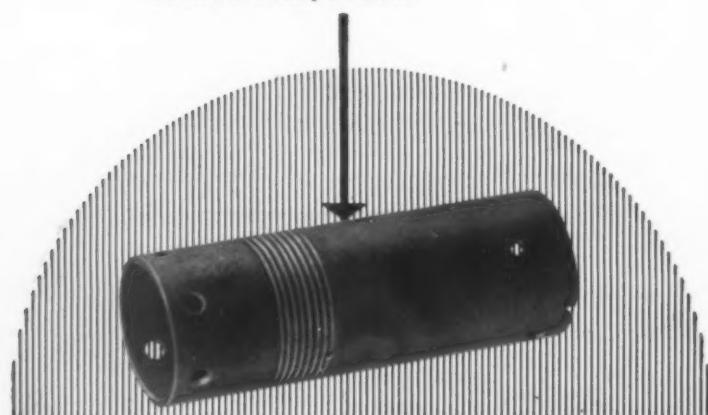
If you want a dependable source of supply for Phenol Fibre, Vulcanized Fibre, or special laminates . . . or if you're interested in having completed parts or sub-assemblies delivered on schedule at your plant . . . get in touch with Taylor. Send a sketch or blueprint, if you will, and we'll tell you exactly what we can do for you. Expect plenty; you won't be disappointed.

## TAYLOR FIBRE COMPANY

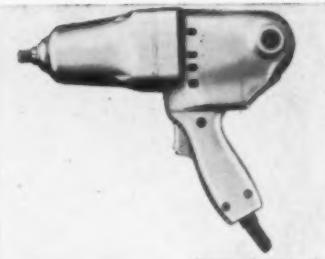
LAMINATED PLASTICS: PHENOL FIBRE • VULCANIZED FIBRE • Sheets, Rods, Tubes, and Fabricated Parts  
NORRISTOWN, PENNA.

Pacific Coast Plant: LA VERNE, CAL.

Offices in Principal Cities



### ELECTRIC IMPACT WRENCH

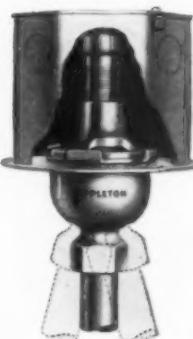


PORTRABLE electric impact wrench is rated at  $\frac{3}{8}$ " thread diameter, and will quickly tighten or remove either left or right-handed nuts, bolts, and cap screws. Light weight and minor torque reaction reduce operator fatigue. Reversing switch allows unit to be used for either driving or removing fasteners. The wrench may be obtained with six hexagon sockets ranging from  $9/16$ " to  $15/16$ ". *The Black & Decker Mfg. Co., Towson 4, Maryland.*

### WAX FOR METAL IMPACT EXTRUSION

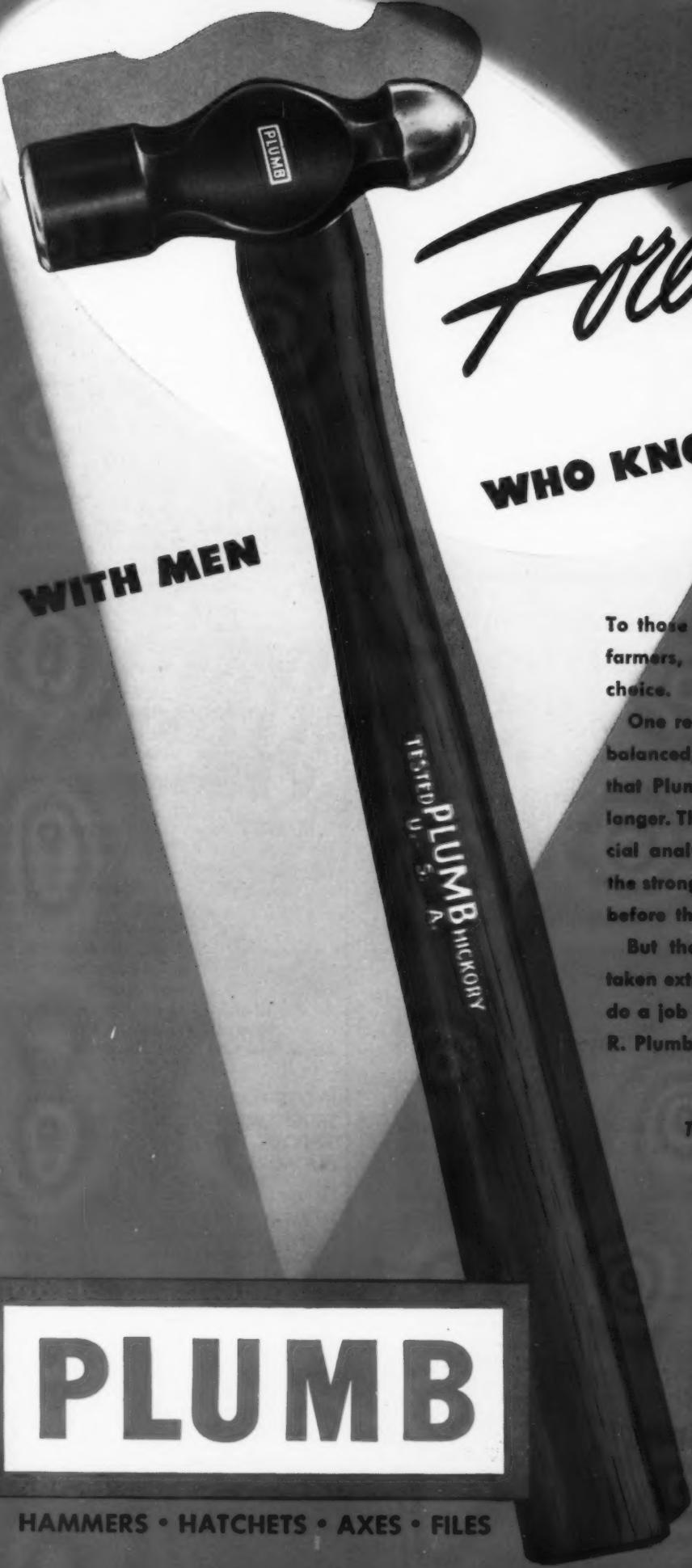
LIQUID wax for use as lubricant in the manufacture of metal articles by the impact extrusion process is being marketed as Johnson's LW#20 Wax. It is said to provide an efficient and rugged lubricant to meet the great heat generated in the process and the need for complete freedom of flow. It gives an even coat and does not dissipate itself. It can be applied to slugs before extrusion by dipping or tumbling. It provides a dry finish that is easy to handle and sanitary, and will not turn rancid. *S. C. Johnson & Son, Inc., Racine, Wis.*

### SAFETY SWIVEL HANGER



TYPE SSH safety swivel hanger for industrial lighting installations, furnished complete with cover, can be used with  $1\frac{1}{2}$ " to 4" deep concrete as well as 4" octagonal boxes measuring  $1\frac{1}{2}$ " or  $2\frac{1}{8}$ " deep. In the hanger, the weight of the entire suspended unit is borne by a fixture stud instead of relying upon the screws and screw ears of the box or ring for support. Furnished steel plate serves as a cover for either the 4" octagonal boxes or concrete rings. *Appleton Electric Company, 1701-1759 Wellington Ave., Chicago 13, Ill.*

(Please turn to page 158)



WITH MEN

Foremost!

WHO KNOW FINE TOOLS

To those who work with hand tools (artisans, farmers, mechanics), Plumb is their foremost choice.

One reason is that Plumb tools are perfectly balanced, not fatiguing or weighty. Another is that Plumb tools are made sturdier, they last longer. The specially selected materials, the special analysis steel in the one-piece head and the strong hickory handle, must pass many tests before the tool is finished.

But the foremost reason is that Plumb has taken extreme care in perfecting hand tools that do a job faster and do the work better. Fayette R. Plumb, Inc., Philadelphia 37, Pa.

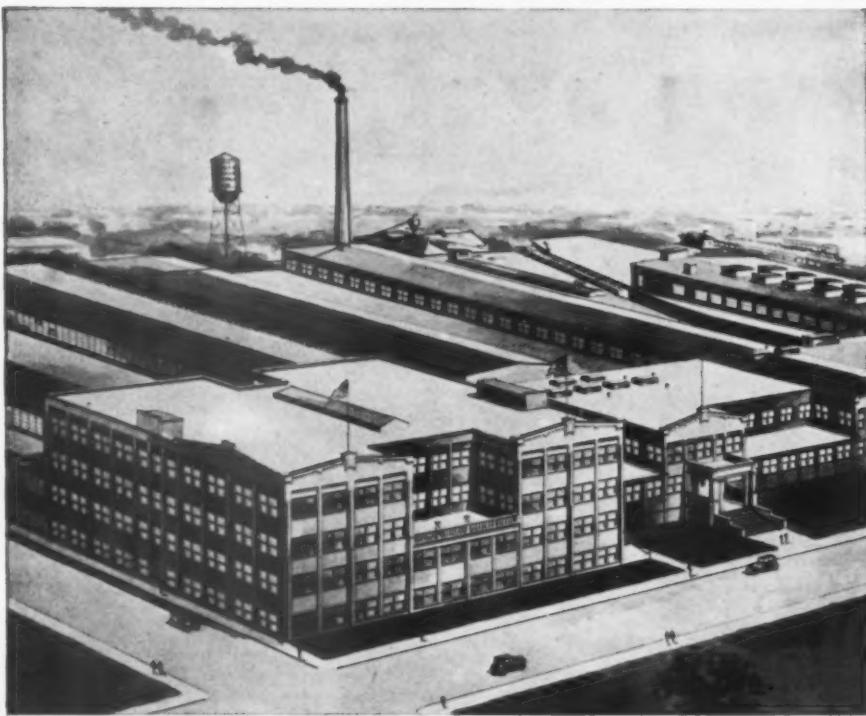
The red handle with the black head  
—exclusively Plumb.

**PLUMB**

HAMMERS • HATCHETS • AXES • FILES

Quality Comes FIRST  
**PLUMB**  
is FIRST in Quality

# "KEX" Industrial Wiping TOWELS



American Laundry Machinery Company  
Cincinnati, Ohio

Uses "KEX" Service

THE list of subscribers to "KEX" National Service reads like a volume of America's Industrial "Who's Who."

The low cost and efficiency offered by "KEX" Industrial Wiping Towels are behind this definite trend to "KEX" National Service. Managements like the idea of this automatic rental service that follows their wiping towel needs from week to week. The neat, easily handled bundles in which "KEX" are delivered help control distribution, and contribute to better housekeeping.

Follow the lead of industrial leaders all over the country who overlook no opportunity to keep costs down—and efficiency up.

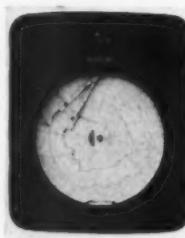


Nothing to Buy—No Expensive Inventory—Just a Low Monthly Rental. The first month should show a decided saving on wiping costs.

For complete information, see your classified Telephone Directory for nearest KEX distributor, or write KEX NATIONAL SERVICE, 295 Fifth Avenue, New York 16, N.Y.

**"KEX" NATIONAL SERVICE**  
REG. U.S. PAT. OFF. 

## AUTO-SELECTOR CONTROLLER



THIS auto-selector controller controls selectively, from either of two related variables, by positioning a single valve, damper or other operator. This selection is determined by the variable having the greater tendency to exceed its pre-set limit; and the transfer of control is made smoothly, instantly, and automatically. The instrument incorporates the automatic reset function in the control of either or both variables. Available as a recorder or indicator. Described in Bulletin 421. *The Foxboro Company, Foxboro, Mass.*

## MATERIAL FOR REPAIR OF CONCRETE FLOORS

"TAMPATCH" is a material for the repair of broken, rough, or uneven concrete surfaces, interior or exterior. Floor may be placed in service almost immediately after repairs have been made. Traffic over the area smoothes out the repaired section by a compressing action. Material can withstand heavy traffic loads. Delivered in ready-mixed form, ready for use. Unused material may be kept on hand. *United Laboratories, Inc., 16801 Euclid Ave., Cleveland 12, O.*

## ALUMINUM PIPE WRENCH



FORGED aluminum alloy pipe wrench is said to offer strength almost double the government specification requirements for the same tools made of heavy metal, and weight about one-third. Jaws are made separately of heat-treated alloy steel, then securely fitted into the hook and the handle, and can be replaced when worn. Design of nut pivot equally distributes the strain or load to threads on both sides of the hook. *H. M. Schick Products Co., 135 Tehama St., San Francisco, Calif.*

## INDUSTRIAL TRUCK WITH 12-FOOT LONG PLATFORM

POWER industrial truck with platform 12 feet long and having extra low-lift is applicable to handling operations in plants where it is desired to transport close to floor levels heavy loads of materials or products having large surface areas, placed on skids or supported on frames mounted on skids, for safety and stability. Weight of truck is 8,000 lbs.; its load-carrying capacity 20,000 lbs. Length of platform is 144", width 32". Top of platform in lowered position is 11½" above floor level; maximum height elevated 17". *Elwell-Parker Electric Co., 4205 St. Clair Ave., Cleveland 14, O.*

(Please turn to page 162)



Bright Beauty  
undimmed through the years

Solid Strength for a lifetime  
of utility

*Superior*

STAINLESS  
STRIP  
STEEL



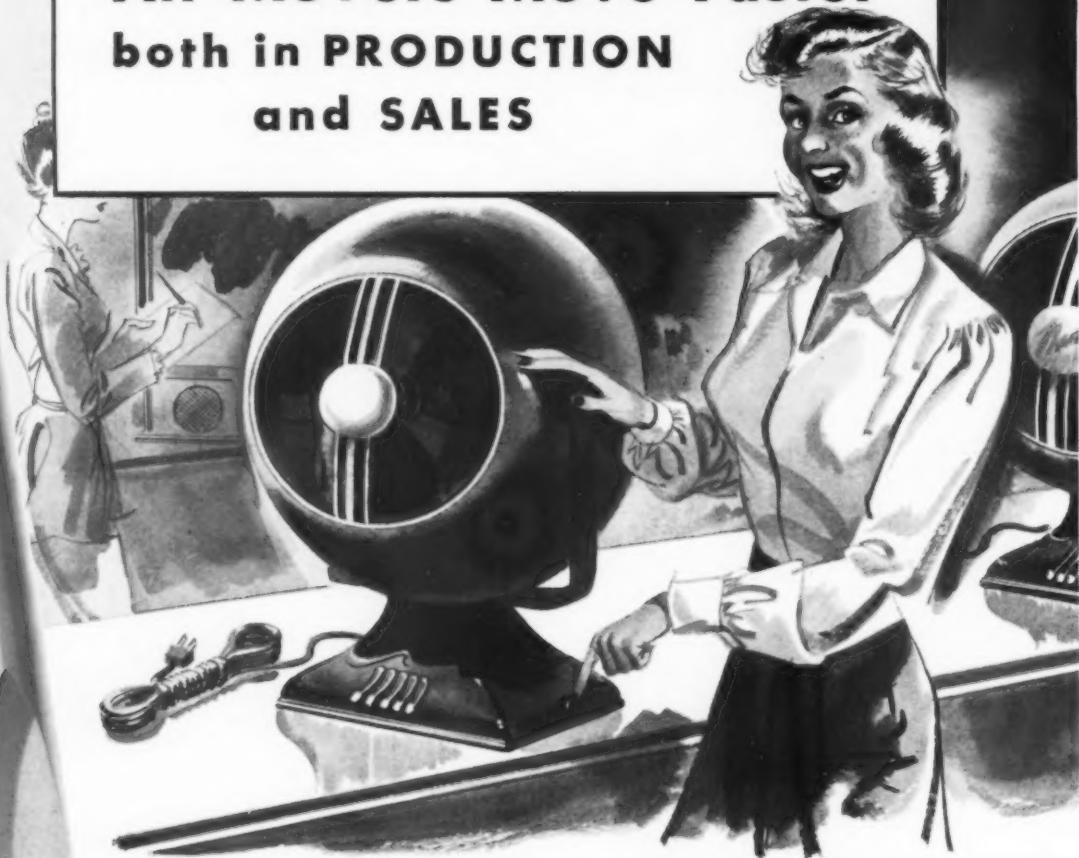
Pick Superior Stainless in grades according to your product requirements—and benefit by precious-metal brilliance, alloy-steel strength, hardness, toughness . . . in coils for high production at lower cost.

Superior Stainless in every grade is produced by strip steel specialists. Let us detail the difference to you!

**Superior Steel**  
CORPORATION

CARNEGIE, PENNSYLVANIA

## Air-Movers Move Faster both in PRODUCTION and SALES



... when they're assembled "for keeps" with AMERICAN PHILLIPS SCREWS

4-WINGED DRIVER CAN'T SLIP OUT  
OF PHILLIPS TAPERED RECESS

"FAIR WINDS" IN PRODUCTION: These new "wind-tunnel" fans are designed for lasting efficiency, exceptionally handsome appearance, and unbroken silence in operation. So what other fastening method could be used—*except* American Phillips Screws? Now there's no danger of damage to the deep-drawn, sleek surfaces, no burring of screwheads, no lagging production due to fumbled and slant-driven screws. In fact, assembly moves 50% faster than it does with slotted screws.

"FAIR WINDS" IN SALES: Good-looking modern design of American Phillips' universal cross-recess is a definite accent to the modern design of any product in which these screws are used. And salesmen can accent the story of extra vibration-resistance—which protects silent operation and prolongs product-life. See what American Phillips Screws can do for your product, both in production and sales. Write.

AMERICAN SCREW COMPANY, PROVIDENCE 1, RHODE ISLAND  
Chicago 11: 589 E. Illinois St. Detroit 2: 502 Stephenson Building

AMERICAN  
PHILLIPS *Screws*



ALL TYPES  
ALL METALS: Steel,  
Brass, Bronze, Stainless  
Steel, Aluminum,  
Monel, Everdur (silicon  
bronze)

**NEW  
ADDITIONS**

TO THE BROWN & SHARPE

# PERMANENT MAGNET CHUCKS

**NOW ... NEW SMALL SIZES—NEW FEATURES**

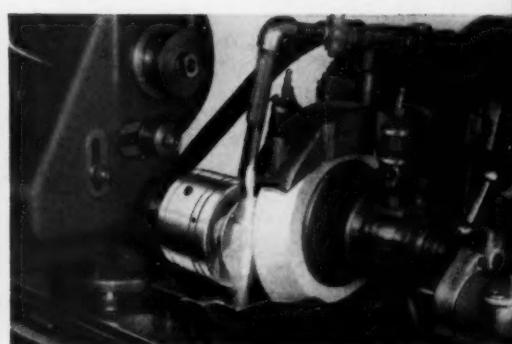
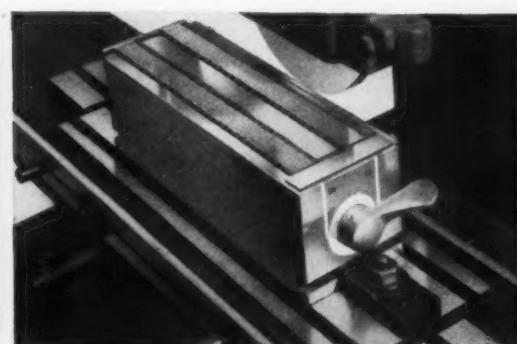


**No. 408 Rectangular Model**, with its small working surface (4" x 8"), is specially suited for use on small surface grinding machines, bench grinders and for bench work. Pole spacers are closer than on other rectangular models to permit holding smaller pieces.



trol of holding strength from any position in which chuck stops.

**No. 7R Rotary Model**, next smallest rotary model, holds work from  $1\frac{3}{16}$ " to 7" in diam. The amount of energy or holding power in the face can be controlled by giving the operating handle a part turn, thus permitting work to be moved or tapped into position and centered accurately.



Grinding bushing ends on No. 408 Chuck

Group grinding on No. 412 Chuck

Disc grinding of pump part on No. 5R Chuck

*We urge buying through the Distributor*

**BROWN & SHARPE** BS

## Cleveland Container Products

### Serve Many Purposes and Fields of Activity

All are quality products . . . rightly priced . . . rapidly produced. Our Creative Design and Engineering Departments are at your service.

For the latest data and ideas check the items of interest to you.

- Spirally wound Tubes, Cores and Cans.
- All fibre and combination fibre and metal cans.
- Friction plug, slip cover, screw cap containers.
- Paper thread protectors for male threads (tubes) for female threads (plugs).
- Paper discs.
- Kraft and fish paper tubes for coil forms and condenser covers.
- Cosmalite—spirally laminated paper base phenolic tubing for the electrical industry.

Your inquiry will be given immediate attention.

May we serve you?

### The CLEVELAND CONTAINER Co.

**6201 BARBERTON AVE. CLEVELAND 2, OHIO**

- All-Fibre Cans • Combination Metal and Paper Cans
- Spirally Wound Tubes and Cores for all Purposes
- Plastic and Combination Paper and Plastic Items

PRODUCTION PLANTS also at Plymouth, Wis., Ogdensburg, N.Y., Chicago, Ill., Detroit, Mich., Jamesburg, N.J.  
PLASTICS DIVISION at Plymouth, Wis. • ABRASIVE DIVISION at Cleveland, Ohio  
SALES OFFICES: Room 5632, Grand Central Term. Bldg., New York 17, N.Y., also 647 Main St., Hartford, Conn.  
CANADIAN PLANT: The Cleveland Container Canada, Ltd., Prescott, Ontario



**HOLLOWELL**

### MANY TYPES FROM WHICH TO CHOOSE

The serviceable, ready-made "Hollowell" Work Benches of Steel are ideal equipment for modern shops. "Hollowell" Benches have smooth, long-wearing steel tops, are also available with heavy, high-grade laminated wood tops — or steel tops covered with "Tempered Presswood". Made in 4 standard heights, 3 widths, and 7 lengths, these "Hollowell" units can be used either individually or bolted together to form a continuous work bench — most any length — a money-saving feature not practicable with "nailed-together" wooden benches. The "Hollowell" — rigid as a rock — does not require costly bolting to the floor. Sturdy "Hollowell" Stools or Chairs of Steel will very readily solve the seating problem in any shop. Stool heights from 18" to 30" in graduations of 2" . . . chairs with adjustable back rests. They're wobble-proof and will stand up under heavy duty for years and years. Write us for the name and address of your nearest "Hollowell" Industrial Distributor and for your copy of the "Hollowell" Catalog.

OVER 45 YEARS IN BUSINESS

**STANDARD PRESSED STEEL CO.**

JENKINTOWN, PENNSYLVANIA BOX 590

BRANCHES: CHICAGO • DETROIT • INDIANAPOLIS • ST. LOUIS • SAN FRANCISCO

### 15-INCH DRILL PRESS

THIS 15" drill press features a depth stop which operates directly on the feed pinion between the two lower quill bearings thus eliminating any side thrust or consequent deflection of drill point. The quick setting gauge is calibrated in sixteenths. Spindle has a travel of 4" with four speeds from 630 to 4850 rpm. Both table and base have ground working surfaces 10" x 10" and are provided with parallel slots for  $\frac{1}{2}$ " bolts. *Reypo Corporation, 5751 West 98th St., Los Angeles 45, Calif.*



### PAINT AND FINISH-REMOVING MATERIAL

MATERIAL for removing paint and such coatings as lacquer, primer, synthetic enamel, baked and air-dried varnish, and baked automotive finish is known as Stripit. Under normal conditions it will remove at least three coats of paint in one application. Does not require the addition of acids or thickeners, mixing, stirring or other handling. Will not bleach or raise the grain of wood. Non-inflammable and does not require use of inflammable solvents. *Magnus Chemical Co., Dept. P, Garwood, N. J.*

### HIGH-LIFT PALLET WORKSAVER



LOW-COST high-lift Worksaver electric pallet truck, 2500-lb capacity, is battery operated for both travel and lifting loads. It is 39" by 31" in overall dimensions, not including the forks, and lifts pallets 66" for overhead tiering. The mast is 83" high and permits the truck readily to enter such low headroom spaces as street trucks and freight cars. Bulletin P-1102 available. *The Yale & Towne Manufacturing Company, 4673 Tacony Street, Philadelphia, Pa.*

### COLLAPSIBLE TYPE HAT AND COAT RACK

THIRTY-TWO coat hooks (or 4-ft. rod for garment hangers) and two 4-ft. hat shelves are provided in a compact rack unit known as the "Checkertette", which can be set up in less than a minute without nuts, bolts or tools. It is completely interlocking and cannot collapse when in use. It can be assembled at either standard height or in a lower position for small children. It has a carrying harness for portability. *Vogel-Peterson Co., 624 So. Michigan Ave., Chicago, Ill.*

(Please turn to page 164)

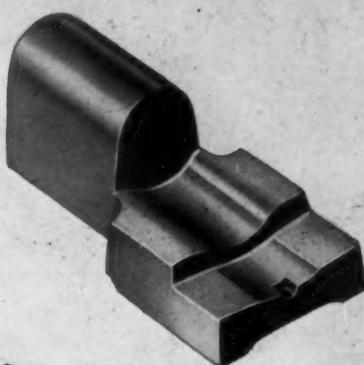
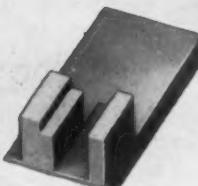
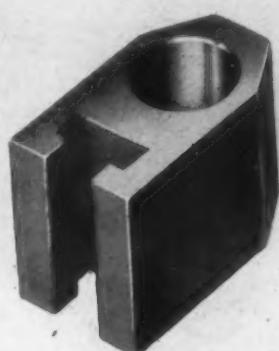
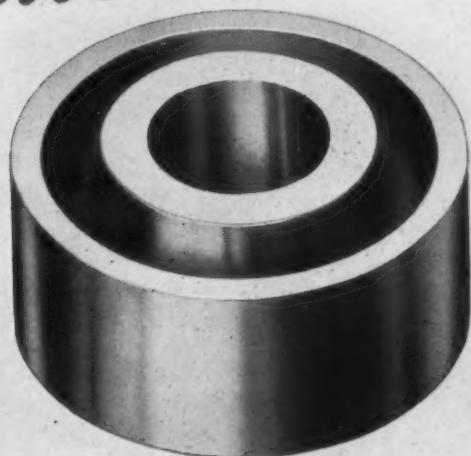
✓ Director of Purchases

✓ Chief Engineer

✓ Production Executive

AMPLEX-OILITE has experienced

*No Material Shortage!*



Our metal powders, particularly iron powder, are produced essentially from by-product materials.

## OILITE FINISHED MACHINE PARTS

With the shortage of castings, stampings and forgings, manufacturers look to Amplex for OILITE finished machine parts, from metal powder, replacing those materials. Very frequently Amplex furnishes OILITE finished machine parts, through

powder metallurgy, at a saving. Other advantages of OILITE parts are short tool up time, quick delivery, improved appearance, and the incorporation of details of design not machinable by production machine tools.

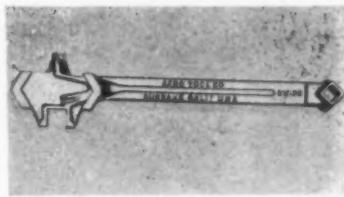
Send your blueprints to Amplex Field Engineer or the Home Office. Address Dept. P.

**AMPLEX MANUFACTURING CO.** DETROIT 31,  
MICHIGAN

*Division of Chrysler Corporation*

FIELD ENGINEERS AND OILITE BEARING DEPOTS IN PRINCIPAL CITIES

### WRENCH FOR STEEL DRUMS



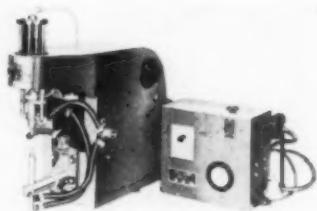
UNIVERSAL type wrench, #5001, has sockets and lugs so placed to fit all standard steel drum closures. It also has a steel lip for removing steel caps over drum closures. The wrench will fit male, female and hexagon drive closures, and closures driven by internal lugs. It is made of cast steel, cadmium plated to prevent sparking. Weight 2½ lbs. *Aero Tool Company, 6930 Avalon Blvd., Los Angeles 3, Calif.*

### BATTERY CHARGER



AUTOMATIC single-circuit motor-generator battery charger for motive power batteries, known as the "Charg-o-Matic," is furnished as a complete package unit, is portable, and occupies less than four square feet of floor space. The unit is of the "dead front" type to prevent accidental contact with electrical equipment. It will charge a lead-acid battery in 8 hours; a nickel-alkaline battery in 7 hours, and meets specifications of Electric Industrial Truck Association and recommendations of battery manufacturers. *The Hertner Electric Co., 12690 Elmwood Ave., Cleveland, O.*

### BENCH TYPE SPOTWELDER



AUTOMATIC 7½ kva bench type spotwelder, Model 752-PB, for joining small metal parts, is precision-engineered to handle light non-ferrous metals of the same or dissimilar alloy and thickness, on a high speed production basis. It will also handle ferrous metals up to two thicknesses of 14 gauge CRS or equivalent. Regularly furnished for 220 volt, 60-cycle, single phase a-c operation, this model is also available in 380 or 440 volts on special order. *Weldex, Inc., Dept. K, 7341 McDonald Ave., Detroit 10, Mich.*

(Please turn to page 166)



### Buy AMERICAN—the COMPLETE Chain Line

**ACCO**



York, Pa., Chicago, Denver, Detroit, Los Angeles, New York,  
Philadelphia, Pittsburgh, Portland, San Francisco, Bridgeport, Conn.

**AMERICAN CHAIN DIVISION  
AMERICAN CHAIN & CABLE**

In Business for Your Safety

**Here's another name  
for SPRING STEEL**

**Purdy**

Blue Tempered and Polished

Cold Rolled Annealed

SAE 1095 and 1075 in Coils or Straight Lengths

Precision Slit and Sheared to Your Order

*The Planet Line*

STAINLESS STEELS

COLD FINISHED  
STEELS

SPRING STEELS

TUBING

TOOL STEELS

DRILL ROD

COLD ROLLED  
STRIP STEEL

ALUMINUM SHEETS  
AND COILS

A. R. Purdy Co. has been a leader in spring steel for 35 years. That's why, in addition to *full stocks* and *prompt service*, PURDY can supply the technical advice that will insure your getting the correct type for your requirements. PURDY is depended on in spring steel because our technicians can answer the questions that count most in steel fabrication. So when you need any type of spring steel—bars, coils, bands, wires and strip—call PURDY. Write, wire or telephone your needs, today!

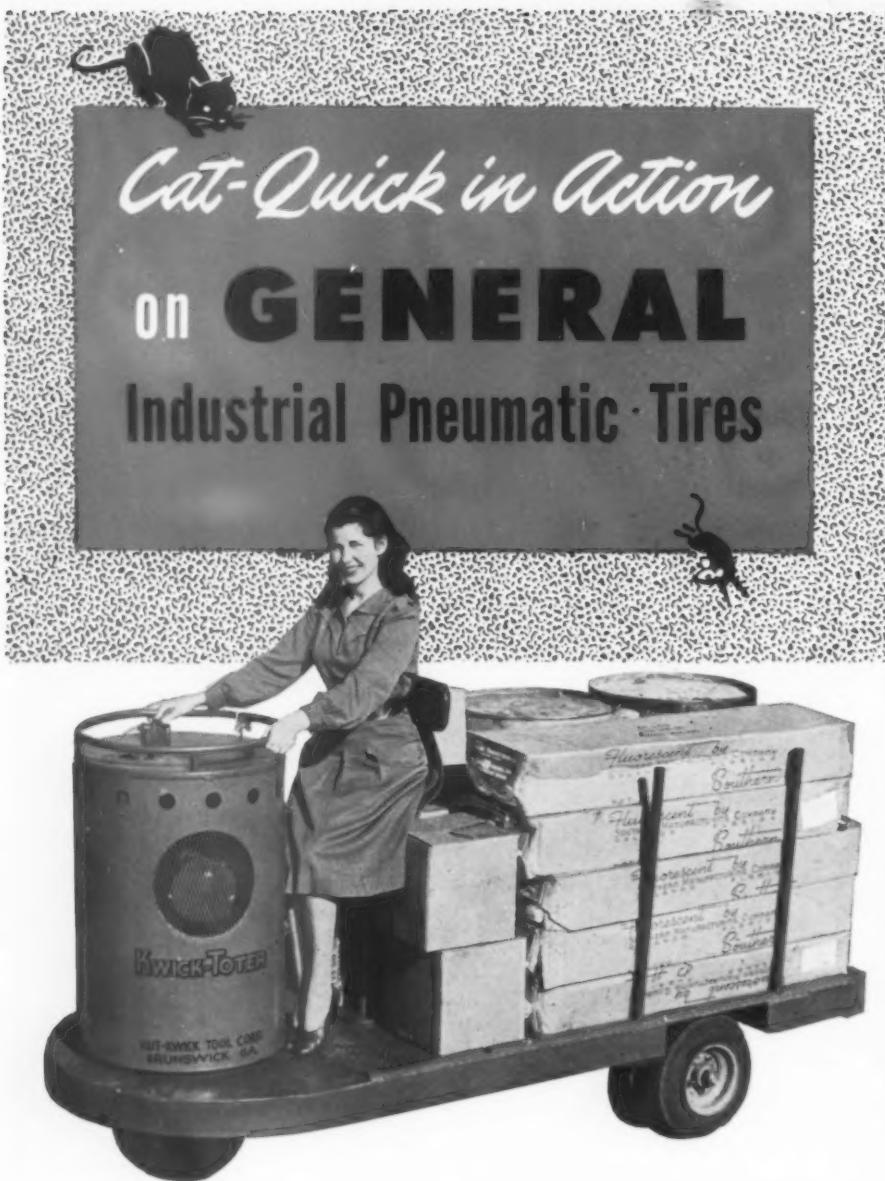
*a. r. purdy co.*  
INC.



NEWARK: HUmboldt 2-5566  
CONNECTICUT: ENterprise 6400  
NEW YORK CITY: CHelsea 3-4455

MAIN WAREHOUSE and OFFICE  
ORIENT WAY & PAGE AVE., LYNTHURST, N. J.  
Rutherford 2-8100 — Teletype Rutherford, N. J. 79

SYRACUSE: ENterprise 6400  
ROCHESTER: ENterprise 6400

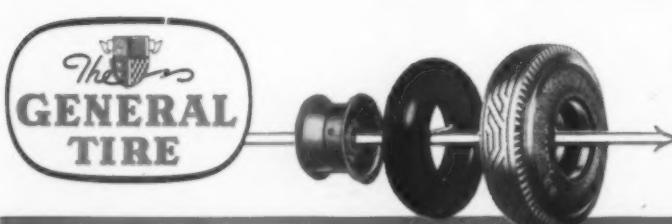


## Kwick-Toter moves loads faster!

For swift and complete maneuverability, in plenty of space or limited space, the all-new KWICK-TOTER fills a definite need. It will turn completely around in its own length; runs from 2½ to 10 mph; with dual wheels will carry 2-3000 pounds. Load area 23½ sq. ft. Overall weight 990 lbs. Length 108 in. Width 42 in. Kut-Kwick Tool Corp., Brunswick, Georgia.



The most modern of the new materials handling equipment is being supplied with General Industrial Pneumatic tires. Available in complete assemblies of wheel, tube and tire, or tire alone.



**THE GENERAL TIRE & RUBBER CO.**

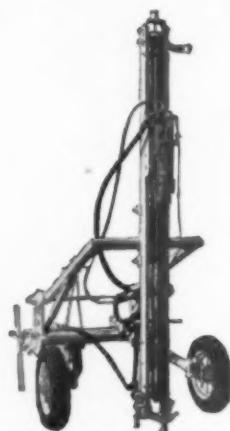
Akron, Ohio

### HOLLOW FORGED PIPE PLUG



THIS pipe plug is hot forged and precision threaded to American standard pipe sizes and also with British Whitworth threads. Available in  $\frac{3}{4}$ " and 1" sizes, square head black or galvanized. It is designed for cold working pressures of 3,000 lbs., water, oil or gas, is non-shock, and is sufficiently low in cost to be used on any low pressure application, maker states. Pittsburgh Pipe & Coupling Co., Allison Park, Pa.

### WAGON DRILL



MODEL BW-1 wagon drill, equipped with Thor Model 105, 1¼" drifter rock drill, features a single reversible pneumatic motor that feeds and raises the drill, eliminating the need of a hoist. The motor driven feed also permits throttle control that allows the feeding speed of the drill to be reduced when necessary. The drill's mast can be swung 360 degrees vertically or horizontally to permit drilling of holes at any angle. Independent Pneumatic Tool Co., 175 State Street, Aurora, Ill.

### "FREE WHEELING" TUBE CUTTER



TUBE cutter with "free wheeling" ball bearing action is designed for use with copper, brass, aluminum, Bundy steel, block tin and lead tubing, hard or soft emper, and will cut all sizes from  $\frac{1}{8}$ " to 1" outside diameter inclusive. Ball thrust bearings are built into the tool to provide ease of operation and make possible speedy size adjustment. Tubing is cut on rollers which have a flare cut-off groove. Cutter is identified as No. 274-F. Bulletin No. 67 available. The Imperial Brass Mfg Co., 1200 W. Harrison St., Chicago 7, Ill. (Please turn to page 168)



## The lights that must not fail

Danger is ever near when a hospital, school, theater or other building of public assembly suddenly is plunged into darkness. Such lighting failure may occur at any time and anywhere, for despite all precautions of utility companies, storms, floods, fires, and accidents beyond their control can cause interruptions of normal electric current supply.

Many buildings are safeguarded against lighting failures. They are equipped with Exide Emergency Lighting, which assures safe, sure, modern protection. It takes over the lighting load instantly and automatically when needed.

There are Exide Batteries for every storage battery need. They supply safe, dependable power for time-and-cost-saving battery electric industrial trucks and mine haulage units. They are used by telephone and telegraph companies and radio stations. On railroads, ocean vessels and aircraft they perform numerous tasks. And on millions of cars, trucks and buses they daily prove that "When it's an Exide, you start."

Information regarding the application of storage batteries for any business or industrial need is available upon request.

**1888...Dependable Batteries for 60 Years...1948**

**Exide<sup>®</sup>**  
**BATTERIES**

THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia 32 • *Exide Batteries of Canada, Limited, Toronto*  
DECEMBER, 1948

# Wide Selection

*Blue Devil*  
SOCKET SCREW PRODUCTS



**Flat Head Cap Screws**  
Flush type screws. Fit standard counter-sink.



**Socket Set Screws**  
Precision-ground thread with rust-resistant finish—five point styles



**Socket Pipe Plugs**  
Safer, stronger—excellent seal. Made of alloy steel.



**Socket Cap Screws**  
Sturdy, cold-formed head—continuous fibre structure.



**Socket Screw Keys**  
Minimum play between key and socket.

"Blue Devil" socket screw products are available from stock in a wide selection of standard sizes and lengths . . . there is a type and stock size for almost every fastening application.

Sold through Industrial Supply Distributors

*Blue Devil*  
SOCKET SCREW PRODUCTS

SAFETY SOCKET SCREW COMPANY

4438 N. KNOX AVENUE • CHICAGO 30, ILLINOIS

11 Park Place  
New York 7, N. Y.

816 W. Fifth Street  
Los Angeles 13, Calif.

## EXTRA-HEAVY DUTY CHUCKS

THREE-JAW geared scroll chucks for extra-heavy duty are said to insure long and efficient service under the most rugged operating conditions. Made in two styles—with serrated step-along jaws, or with American Standard tongue-and-groove jaws—the chucks are built in 8", 10", 12", 15", 18", 21", and 24" sizes, all fit 6"-15" American Standard Flanged Spindle Noses of any machine. Precision machining of all components results in full contact of all bearing surfaces. *The Warner & Swasey Co.*, 5701 Carnegie Ave., Cleveland 3, O.

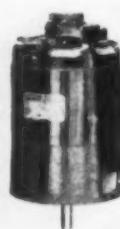


## VALVE REFACER



"99" valve refacer is a streamlined basic model of the Thor refacer line, designed for precision, wet grinding. It is equipped with a double-grip collet and new speed chuck for fast, precision valve refacing at all standard angles. Collet is hardened, ground and internally lapped, gear driven by its own individual motor. Chuck permits even large butt-end valves to be admitted and released with one turn of the new 2 1/4" hand wheel. *Independent Pneumatic Tool Co.*, 175 State Street, Aurora, Ill.

## MOTORS FOR JET PUMPS

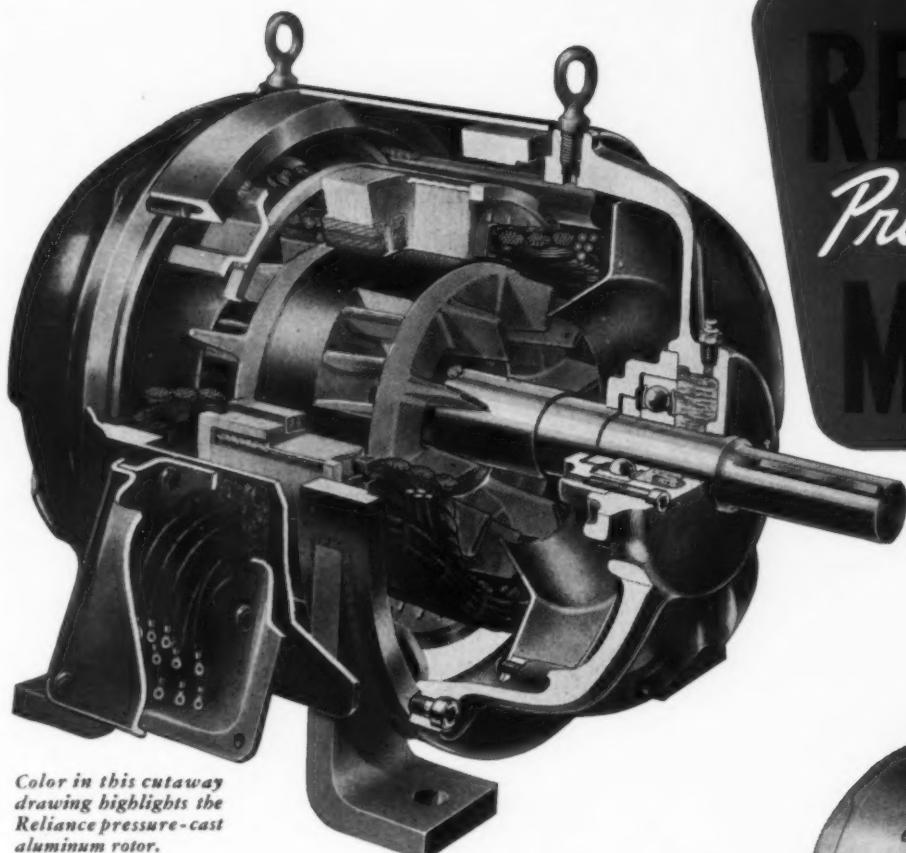


FRACTIONAL hp motors for jet-pumps in ratings of 1/4-, 1/3-, 1/2-, 3/4-, and 1-hp are available in Types KH (split-phase) 1/4- and 1/3-hp only, KC (capacitor-start) all ratings, K (three-phase) 3/4- and 1-hp only, and BC (direct-current, compound-wound) 1/3-, 3/4-, and 1-hp only. Motors are equipped with ball bearings for long life on thrust loads, and a tapped hole is provided in the top end shield for the attachment of a drip cover. Bulletin GEC-194 available. *General Electric Co.*, Schenectady 5, N. Y.

(Please turn to page 170)

# INDESTRUCTIBLE . . .

## PRESSURE-CAST ALUMINUM ROTORS



Color in this cutaway drawing highlights the Reliance pressure-cast aluminum rotor.

One of the many outstanding features that make Reliance *Precision-Built* Motors your best choice for dependable, long-lasting power is an indestructible rotor, pressure-cast in aluminum. This construction makes rotor bars, short circuiting rings and fan blades an integral section for rugged service requirements. Rotor cores of electric silicon steel are precision punched for greatest efficiency and the slots are skewed to provide quiet operation and uniform starting torque. For further facts on what *precision* means in Reliance *Precision-Built* Motors, write for Bulletin C-118.



Reliance Protected Open A-c. Motor.

Sales Representatives  in Principal Cities

**RELIANCE** ELECTRIC AND  
ENGINEERING CO.

1056 IVANHOE ROAD • CLEVELAND 10, OHIO

"Motor-Drive is More Than Power"

## One manufacturer saved \$10,400 in power equipment—CAN YOU?



**Get these eye-opening facts on power distribution systems to your key men—and see how much YOU can save**

With "load-center" power distribution, one medium-sized manufacturer saved \$10,400 in power equipment costs! Another cut equipment costs by 15 per cent—another by 17 per cent. And load-center systems help save money in five other ways, too. So get the facts to your key men now—open their eyes to this new way to power economy in your plant. It's easy. Here's all you do—

### FREE to business management

Examine the General Electric *Load-Center Power Distribution Manual* free of charge. It covers every phase of load-center systems from a discussion of the fundamentals to examples of actual installations in plants like yours. It's prepared by experts, without sales bias, and it's designed to help you solve your power problems. Look through it. Satisfy yourself that it will pay off for you, then—

### Get a FREE showing of the slidefilm

Your key men will quickly learn about power distribution systems in this modern, absorbing, visual way. Here's a General Electric slidefilm with sound that tells what load-center distribution is—what it can do for you. Prepared in terms that get over fast—stick in the memory. Show it, and—

### Get FREE review booklets

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**ACT NOW!** Don't delay. Remember—load-center distribution means reduced costs. So start the ball rolling, by filling in the coupon below, and we'll rush you G.E.'s *Load-Center Power Distribution Manual*. And, with it, we'll tell you how to arrange for a free showing of the slidefilm. *Do it now!*

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General Electric Co.  
Section H 684-11  
Schenectady 5, N. Y.

Please send me a sample copy of the G-E Load-Center Power Distribution Manual without cost or obligation, with details on how I can arrange a FREE SHOWING of the film. (Extra copies at regular manual price—\$1.00.)

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City \_\_\_\_\_

**GENERAL ELECTRIC**

## AIR CHIPPING HAMMER



SMALL air chipping hammer has a jet blower device which cleans off a work surface as though a blow gun were built into the tool. Exclusive pulley valve design is said to provide extra smooth throttle action. In addition to chipping of rust, scale, weld flux, soot, paint and dirt, the tool can be used for: cutting old windings in electric motor repair shops; chiseling wood in pattern shops; cutting oil grooves in large bearings, etc. The tool weighs slightly over 4 lbs. and is just over 10" long. *Chicago Pneumatic Tool Co.*, 6 E. 44th St., New York 17, N. Y.

## ACID-RESISTANT FLOOR ENAMEL

FLOOR enamel, made from Vinylite resin base, is fast-drying, extra-tough, waterproof, and impervious to greases, oils, brine, alcohols, petroleum solvents, soaps, all alkalis and most acids. It is resistant to corrosive fumes, and adheres well to wood, concrete and metal. It can be applied with brush or spray, forming a smooth surface that will not crack or peel off. *Benjamin Foster Company*, 4635 W. Girard Ave., Philadelphia, Pa.

## STRAWBOARD SHEAR

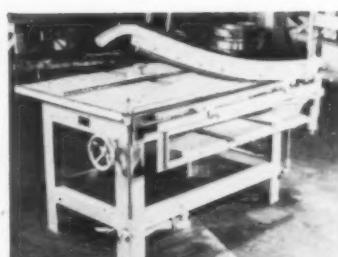


ILLUSTRATION shows Jacques strawboard shear, standard model, 30-50 inches, for accurate hand cutting of leather, paper, cardboard, plastics, cork, mica, rubber, cloth, asbestos fiberboard and linoleum. Also available in the heavy duty model, 55 and 60 inches. Composite steel blade with high carbon tool steel edge is easily removed for sharpening. Blades for special types of work are available. Foot clamp is adjustable to thickness of stock being cut. *Hobbs Manufacturing Co.*, Jacques Division, Worcester 5, Mass.

(Please turn to page 172)

## INDUSTRIAL FINISHES

LACQUERS  
•  
ENAMELS  
•  
THINNERS  
•  
SYNTHETICS

### Approved Government Specifications

You can't beat Alaka's experience when it comes to finishes. Alaka has tailor-made more than 10,000 different industrial finishes. Alaka's research department has amassed a maximum of experience and facility to help you, whatever your finishing problem.

**ALAKA** Lacquers  
**QWIK-BAKE** Synthetics  
**ALAKATONE** Hammered Silver  
**SYNTHALAK** Air-dried Synthetics

Custom Tailored Finishes

TO FIT YOUR REQUIREMENTS



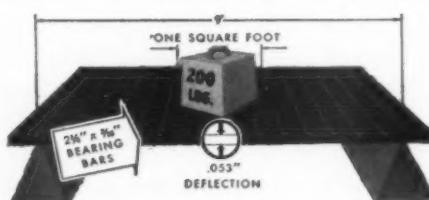
LACQUER & CHEMICAL CORPORATION  
222 FORTIETH ST., BROOKLYN 32, N.Y.

For **STRENGTH** specify

## TRI-LOK

RECTANGULAR

## OPEN STEEL FLOORING



The locked-in strength of Tri-Lok enables it to stand up under heavy loads—even on long spans. No rivets, bolts, or welds are used in the construction of Tri-Lok; this feature eliminates the possibility of loose joints.

Tri-Lok is also available in Diagonal, or Super-Safety U-type Flooring, and in Stair Treads of all types. Write for Bulletin KP 1140.

## DAVO CORPORATION

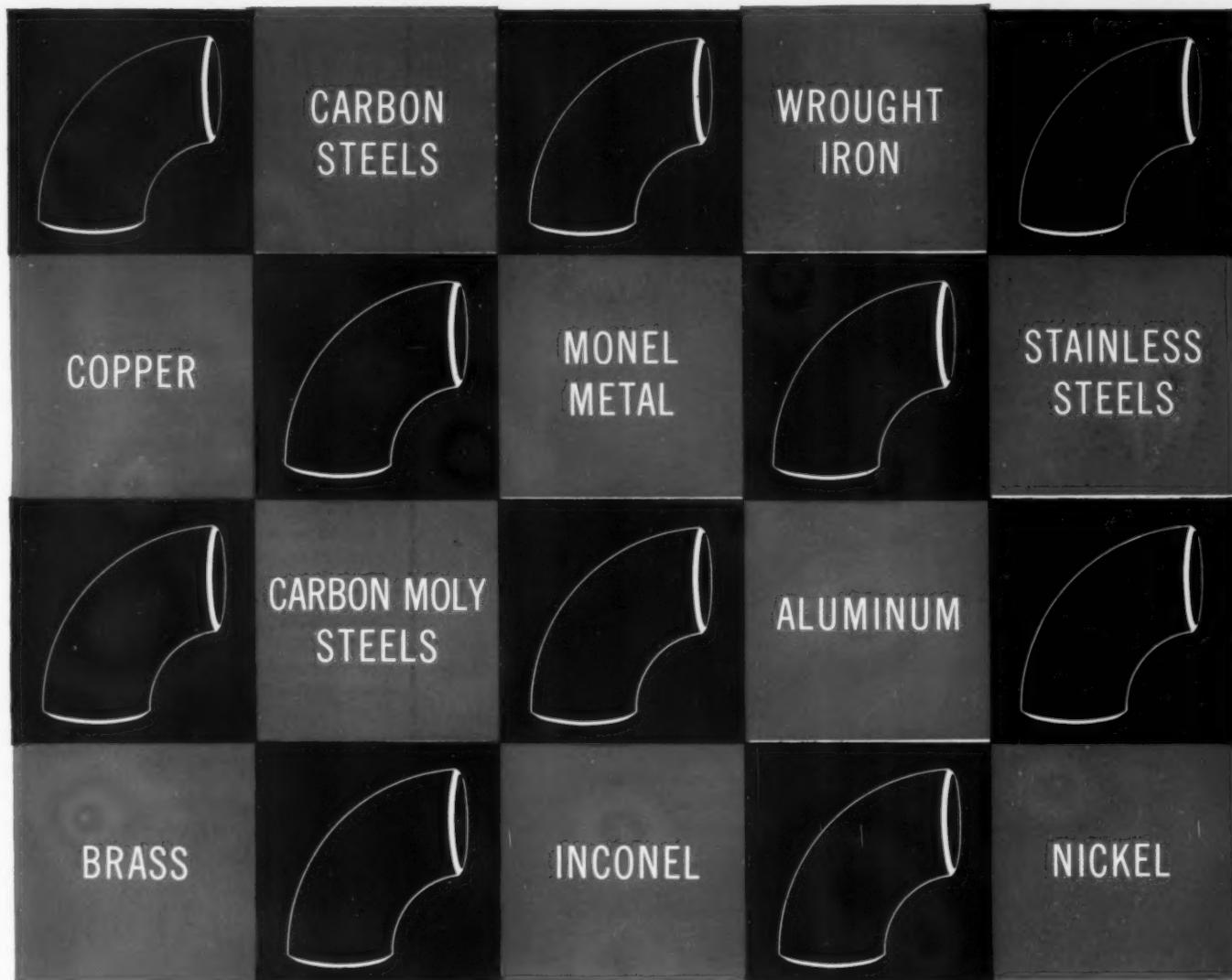
National Distributor for the  
Tri-Lok Company

Davo Bldg., Pittsburgh 22, Pa.

Sales Representatives  
in Principal Cities



PURCHASING



## What's your need in welding fittings?

**T**UBE-TURN welding fittings have been manufactured for more years than any other brand. Tube Turns, Inc. has had the jump on competition—in developing a big line with a wide range of types and sizes, metals and alloys—in building up inventories—in organizing a nationwide chain of well stocked, piping minded distributors. Whatever your need in welding fittings, chances are good of getting what you want when you want it, if you deal with the No. 1 trade name in the field. Despite continuing material

shortages, "Tube-Turn" means service—in good connections.

Manufactured under a well established system of quality control, Tube-Turn welding fittings are dependable for forged-in strength, dimensional accuracy, and adherence to standards.

Write for the new and revised quick-reference chart "Pipe and Fitting Materials". Covers ASTM and other specifications, Chemistry, Service Temperature Limits and Welding Data on carbon, intermediate alloy, stainless and special analysis steels.



**TUBE TURNS, INC., 246 East Broadway, Dept. C, Louisville 1, Kentucky**

District Offices at New York, Philadelphia, Pittsburgh, Chicago, Houston, Tulsa, San Francisco, Los Angeles

# This beats a magic carpet!



**A**ir Express can bring you supplies and equipment from any U.S. point—*overnight*. And that's better than old-style magic! Air Express is the fastest way you can find to ship or receive. No delays, because shipments go on every flight of the Scheduled Airlines.

What's more you get special door-to-door service at no extra cost. With low Air Express rates, you can use this fastest service as a regular procedure. Let Air Express keep your business running fast—and smoothly.

## Specify Air Express—World's Fastest Shipping Service

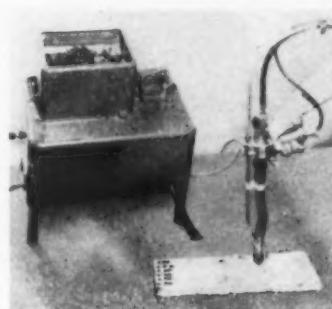
- Low rates—special pick-up and delivery in principal U.S. towns and cities at no extra cost.
- Moves on all flights of all Scheduled Airlines.
- Air-rail between 22,000 off-airline offices.

**True case history:** Rubber equipment users regularly get replacement parts by Air Express so machines won't stand idle. Recent shipment: 102-lb. carton picked up 5 P.M. the 18th in Noblesville, Ind. Air-rail to Dallas, delivered 9 A.M. following day. 799 miles, total cost only \$26.78. Any distance inexpensive, too. Phone local Air Express Division, Railway Express Agency, for fast shipping action.



AIR EXPRESS, A SERVICE OF RAILWAY EXPRESS AGENCY AND THE  
**SCHEDULED AIRLINES OF THE U.S.**

## AUTOMATIC SCREW DRIVER



PNEUMATIC, automatic screw driver feeds screws, one at a time, from a hopper to the driver. One movement of the trigger automatically grips the screw in the driver after it is pneumatically delivered through a tube from the hopper, while a second movement of the trigger gives air pressure to the motor for threading the screw into the desired position. Model shown will handle slotted or recessed head screws from #4 to #10, up to 1 1/4" in length. Other models handle any size or type of wood, metal self-tapping or machine screws. Reed-Prentice Corp., Dept. 37, 677 Cambridge St., Worcester 4, Mass.

## CHEMICAL GAGE



THIS gage is described as particularly suitable for chemicals and other viscous liquids which either corrode or clog the Bourdon tube of a standard pressure gage. The diaphragm is made of Teflon which satisfactorily resists practically all corrosive chemicals. Use of Teflon diaphragm makes it possible to supply the gage for vacuum and for compound ranges as well as for pressures as high as 1600 psi and for temperatures at the gage of 300°F. Removable bottom part and diaphragm ring are supplied in cast iron, bronze, steel, stainless steel, hastelloy, lead coated iron, and Monel. *Helcoid Gage Division, American Chain & Cable Co., Inc., Bridgeport, Conn.*

SEE  
CLASSIFIED SECTION  
PAGE 310

## A BUYING GUIDE FOR ABRASIVES

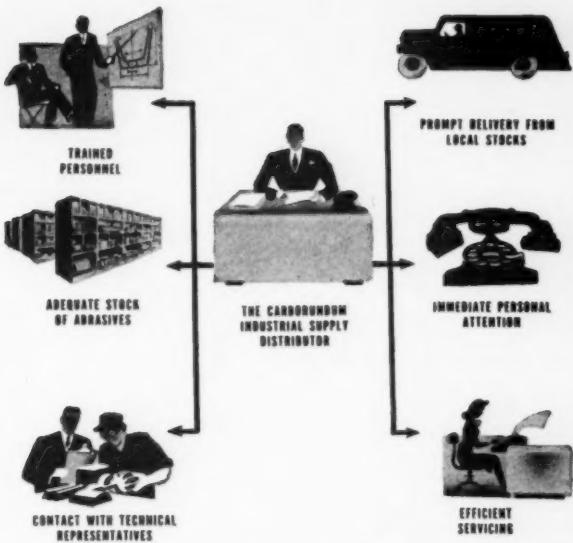
**ABRASIVE PROBLEM:**  
Where is there a convenient  
Source of Supply?

**ANSWER BY**  
**CARBORUNDUM**  
TRADE MARK

As an efficient and dependable source of supply, the services and facilities of your CARBORUNDUM distributor offer time and money saving advantages.

From large and varied stocks of abrasives located conveniently nearby, the products you need are available without delay. Plant inventories can be safely and economically reduced.

Frequent personal service by a trained and experienced local staff provides reliable facts and figures on abrasive applications and operations.



On difficult or unusual jobs, direct assistance from CARBORUNDUM representatives is available.

Simplified buying and other important savings realized from intelligent and efficient handling are creating an increasing preference for abrasives by CARBORUNDUM. The Carborundum Company, Niagara Falls, New York.

A Good Rule for Good Grinding... CALL IN

# CARBORUNDUM

TRADE MARK

BONDED ABRASIVES  
COATED ABRASIVES  
ABRASIVE GRAINS AND  
FINISHING COMPOUNDS



"Carborundum" is a registered trademark which indicates manufacture by The Carborundum Company.

Cool-cutting GREEN GRIT wheels for cemented carbide.

Specialized wheels by CARBORUNDUM for thread grinding.

Diamond wheels to meet stiff technical needs.

A coated abrasive for every sanding and finishing condition.

All standard shapes are supplied in grinding wheels by CARBORUNDUM.

# BUSINESS IN MOTION

To our Colleagues in American Business ...

This is a story of material standardization in which Revere played a part. It is the case of an honored company, which through the typical American process of growth through reinvestment of profits, is now making a great many different items and is known to almost everyone. It found itself buying copper alloys in a large number of widths, gauges and tempers, some of them differing but slightly. If the same material could be used for, say, six parts instead of one, there would be a gratifying saving through purchasing in larger quantities.

Revere was asked if it would like to participate in an examination of the possibilities of standardization of materials for this company. The Technical Advisory Service was given the assignment, and with the full cooperation of the customer's engineering and production heads, made a study that resulted in a confidential report covering 74 pages. Out of 360 parts, changes were suggested in gauges, lengths, tempers and alloys for 225.

Let us quote from a speech by one of the company's engineers to his sales department. Referring to one type of product, he said, "By changing slightly the widths and thicknesses of various brass and bronze strip used in the pressroom, we were able to reduce eleven sizes to one each of brass and bronze . . . That has been done, of course, without affecting in any way the functioning qualities, durability or sales appeal . . . And how do we benefit? We now have two material requirements instead of eleven, two

purchase orders, two follow-ups, two items of inventory to store and count, and many other paper short-cuts, as well as labor and handling economies.

"Further, the reduction in number of sizes makes possible a reduction in inventories of materials, with all the direct and indirect savings thereby brought about.

"Finally, perhaps the greatest gain in a survey of this kind is that it requires the analysis of products and production processes as a whole. It is directly opposed to piecemeal planning and instead requires over-all cooperative effort which usually leads to savings otherwise overlooked.

"Simplification of materials is no front-page method of slashing costs or inducing production to soar. Instead, it is sound engineering which pays modest but worthwhile dividends while maintaining or improving quality."

Because in some cases new equipment is needed, the full effect of this standardization program has not been felt as yet, but already savings of \$25,000 are in sight this year. Revere is exceptionally proud of this study, yet after all, its results were made possible only by the complete cooperation of the customer, who was eager to take full advantage of our knowledge of Revere Metals.

In this great country of ours there are hundreds of companies like Revere, able and eager to help their customers make the best possible use of what they sell. No matter from whom you buy, nor what, we suggest you ask your suppliers about standardization.

## REVERE COPPER AND BRASS INCORPORATED

Founded by Paul Revere in 1801



Executive Offices:

230 Park Avenue, New York 17, N. Y.

## BOX FOR SCRAPS AND FORGINGS



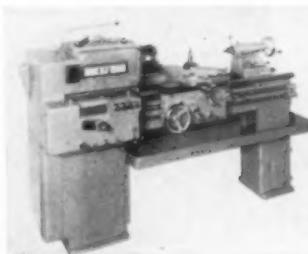
CORRUGATED boxes for efficient handling of scraps or forgings for dumpings are made for use with revolving head fork trucks. Slots at two sides aid handling in dumping operations. Square corners give more interior box space. Design also permits conservation of floor space in stacking. Boxes are all-welded steel construction. Manufactured to customer specifications. *Palmer-Shile Company, 12625 Mansfield Ave., Detroit, Mich.*

## VARIABLE SPEED TRANSMISSION

CUB variable speed transmission has a hardened and ground shaft rotating in a fully sealed double ball bearing assembly. The two outer pulley flanges are fixed to the rotating shaft with the center pulley floating laterally on a large bronze bushing over the hardened shaft. Bearings are sealed against dust and abrasive conditions and are quiet in operation. The unit is designed for all applications where a 3.3-1 speed range and "A" section V belts are sufficient. *Standard Transmission Equipment Co., 78 West Union St., Pasadena 1, Calif.*



## GENERAL PURPOSE LATHE

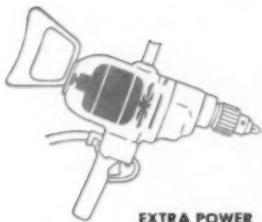


MEDIUM size, medium priced, general purpose lathe has an all geared headstock, with a range of twelve spindle speeds, all quickly adjustable by means of conveniently located levers. The spindle is made from a high alloy steel forging, mounted on Timken zero-precision bearings. Spindle nose has a #1 tapered key drive. Overall design of the headstock permits all types of lathe operations, including high spindle speeds and the use of Tungsten carbide cutting tools. *Rockford Machine Tool Co., Rockford, Ill.*

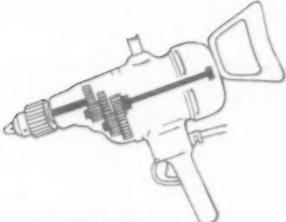
(Please turn to page 178)



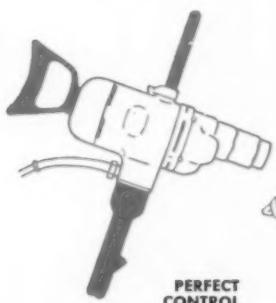
## Here Again, B & D Quality Saves You Time and Money



**EXTRA POWER**  
is what Black & Decker-built motors give you. They won't stall no matter how hard you bear down.



**HEAT-TREATED**  
alloy steel gears—spline-mounted spindles—roller and ball bearing equipment throughout to absorb severe thrust in any direction; your guarantee of top performance on the toughest jobs.



**PERFECT CONTROL**  
is most important when your workers are handling heavy Drills. B&D gives you a choice of handles and, on the largest Drills, extra long safety switch and pipe handles for complete control and balance.



**STURDY HOUSINGS**  
on B&D's large Drills are built to take the rough use that is almost unavoidable on the jobs for which they are designed—yet light in weight—aluminum.

When you're drilling large holes—it's more important than ever to get the best Drills money can buy! That's why the big Black & Decker Drills are your best investment. They have the power and torque, the huskiness and stamina, to make your toughest drilling jobs seem easy . . . and come back for more, day after day after day! Check the Black & Decker quality-built features described at the left. Then call your nearby B&D Distributor for complete details on the complete line of B&D HEAVY-DUTY DRILLS— $\frac{1}{4}$ " to  $1\frac{1}{4}$ ". For your free copy of our catalog, write to: The Black & Decker Mfg. Co., 664 Pennsylvania Ave., Towson 4, Maryland.

LEADING DISTRIBUTORS  EVERYWHERE SELL

**Black & Decker**  
PORTABLE ELECTRIC TOOLS

DRILLS • SANDERS • SCREW DRIVERS • SAWs • HAMMERS • BENCH and PORTABLE GRINDERS • SHEARS

# NEW *Life-Line* MOTORS NOW AVAILABLE

WESTINGHOUSE NOW OFFERS IMMEDIATE DELIVERY  
ON STANDARD LIFE-LINE MOTORS . . .  
IN RATINGS FOR 60% OF INDUSTRY'S REQUIREMENTS

To meet industry's urgent need for more—and better—motors, Westinghouse embarked two years ago on the biggest engineering and manufacturing program ever undertaken in this field.

Industrial buyers were surveyed to find the improvements most desired in existing standard motors. These improvements were incorporated, for the first time, in a single motor—the Life-Line—a motor designed, from scratch, to user specifications.

To build the Life-Line motor, a complete new plant was purchased, tooled and equipped from the ground up, with machines and new techniques never used before to manufacture motors.

*Today, we announce the attainment of our first objective.*

*The new Life-Line motor is now available from stock, in standard types from 1 to 15 hp.*

This objective was selected as of first importance, since 60% of standard, integral horsepower motors required by industrial users fall in this classification. Motor types included in stock are described on the opposite page. On "near-standard" motors, also described, short deliveries are available in these sizes.

Improved deliveries on special types and larger ratings will be the subject of future announcements, as quickly as increased output makes them possible. Watch for them . . . phone your orders to your nearest Westinghouse representative. Westinghouse Electric Corporation, Box 868, Pittsburgh 30, Pa. J-21497



## Westinghouse

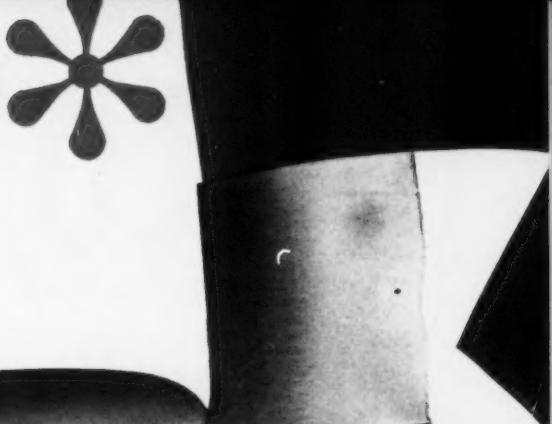
PLANTS IN 25 CITIES . . .

OFFICES EVERYWHERE

*Life-Line*  
*motors*



# FROM 1 to 15 HP



# FROM STOCK

## WHAT IS MEANT BY "STANDARD" MOTORS

"Standard" motors include drip-proof, splash-proof, totally-enclosed, fan-cooled and some totally-enclosed, non-ventilated complete motors, ball-bearing type, having standard electrical characteristics (220/440 volt, 2 or 3-phase, 50 or 60-cycle, standard speed torque and time-temperature characteristics).

*Available from stock in ratings indicated below. Very short delivery on any standard non-stock rating in these frame sizes.*

Life-Line A-C, Single-Phase, 60-Cycle, 110-220-Volt, Heavy-Duty Type CAP Capacitor-Start, Induction-Run Motors

HP	RPM	FRAME	VOLTS	IN STOCK
1	1750	203	220	✓
1½	1750	204		

## TYPES INCLUDED AS "NEAR-STANDARD" MOTORS

"Near-standard" motors are those with minor modifications, which include such items as double shaft extensions, NEMA standard B and C flanges, special No. 1 insulation, round frame, conduit box opposite standard, squeeze connectors instead of conduit box, TENV motors, partial motors, 50-cycle, 40° C. rise open motors, etc.

*Short delivery in frame sizes listed below.*

Life-Line A-C, 3-Phase, 60-Cycle, Squirrel-Cage Motors

HP	RPM	FRAME	ENCLOSURE TYPES IN STOCK

\*REMEMBER?

This announcement was published last spring—And now...

**STOCK to 6 WEEKS Delivery**  
**ON STANDARD 20 TO 75 HP MOTORS**  
**445 FRAME AND SMALLER**

Here's good news for motor users. Westinghouse squirrel-cage motors...open or splashproof, NEMA designs B and C, frames 364 through 445...can now be obtained in 6 weeks or less. Many are in stock. Even the larger sizes, up to 200-300 hp, now have reduced shipping schedules—the shortest since 1942.

Your local Westinghouse representative will give you specific information on the motors you need...in answer to your phone call.



# RITCO

## MACHINED FORGINGS and UPSETS



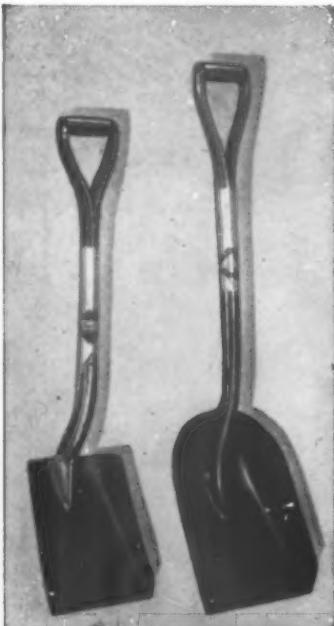
Where accuracy and maximum strength are essential, you can rely on RITCO drop and upset forgings. Smooth and free of flash, they are produced in steel or non-ferrous metals, from  $\frac{1}{4}$  lb. to 15 lbs. in accordance with your blueprints. Our equipment for finishing—machining, grinding and assembling—is complete and modern. Estimates gladly submitted.

### REMEMBER RITCO FOR

Drop and Upset Forgings • Complete Machining Facilities  
Special Bolts, Nuts and Studs • Milled Body Bolts

**RHODE ISLAND TOOL CO.**

148 WEST RIVER STREET  
P. O. BOX 1516, PROVIDENCE 1, RHODE ISLAND  
★ Serving American Industry Since 1834 ★



All Blade Finishes now Black except Molders' Shovels which may be furnished with either face or back polished.

**INGERSOLL STEEL DIVISION**

Borg-Warner Corporation

NEW CASTLE, INDIANA

Plants: New Castle, Ind.; Chicago, Ill.; Kalamazoo, Mich.

## These Blade Edges WON'T SPLIT

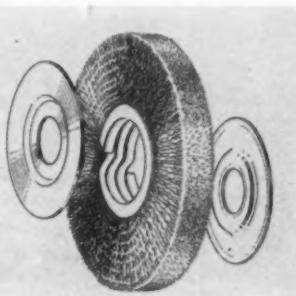
We guarantee this if you make sure to specify . . .

**INGERSOLL**  
*Shovels*

The special Tillage Steel, known as TEM-CROSS, used in the manufacture of all Ingersoll Shovels, was developed in our own steel mills. By cross-rolling and special heat-treating, we give this steel an interlocking, mesh-grain structure that resists splitting.

### FULLER INTRODUCES NEW TYPE WHEEL BRUSH

The Fuller Brush Company has announced the development of a new kind of wheel brush called Fullerdisc, which it is claimed, is easier to install and more economical to replace. Fullerdisc has no separate adapters—rather, the adapters are built into the side plates. The combination adapter-sideplates are not integral with the brush section—thus you replace the brush unit only, at a cost that Fuller says is lower than assembled wheels. Side plates are heavy gauge, cadmium plated and adapted to fit all shaft sizes from  $\frac{1}{2}$ " to 1".



The Fullerdisc wheel brush incorporates the Fullergrit construction—a dense, continuous mass of brush material securely anchored in a rigid metal backbone. Brush ends are pressed flush with the sides of the disc by a patented offset process. Fullerdisc is a full 1" wide, wider than the conventional wheel brush, and as a result the brush wears longer. Available in diameters from 5" to 9" in a choice of 3 materials.

Fullerdiscs can be mounted in multiple sections for operations requiring wide brushing surfaces. Tubes for supporting from two to six sections are standard, but longer tubes are available on request. Complete specifications on the Fullerdisc wheel brush may be obtained by writing Industrial Division, 3590 Main Street, Hartford 2, Connecticut. Printed matter available.

↑ ↑ ↑

### NEW SILICONE PRODUCTS ON WAY, HEAT-PROOF RUBBER, STAIN-PROOF VARNISH, NON-CONGEALING OIL

Silicone products such as oils, greases, resins and rubber, which are made from one of the earth's most plentiful elements, silicon, a component of ordinary sand, are still "an infant in the world of chemistry," K. W. Given of the chemical department of General Electric Company, Pittsfield, Mass., told The American Society of Mechanical Engineers, Metropolitan Section.

Describing the various industrial and military applications of the silicones, "a new chemical family," Mr. Given said that "many more products are sure to be developed." Because of the ability of the silicones to withstand extremes of heat and cold, to resist moisture and to remain unaffected by most other chemicals, some of their uses will be revolutionary.

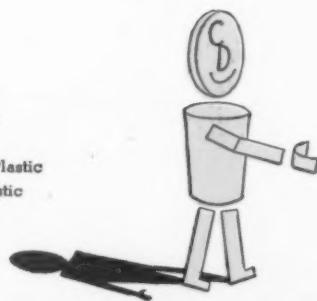
(Please turn to page 180)



## What New Advantages Can You Add to Your Product?

**DIAMOND FIBRE**—Vulcanized Fibre  
**VULCOID**—Resin Impregnated Fibre  
**DILECTO**—Laminated Thermosetting Plastic  
**CELORON**—Molded High-Strength Plastic  
**MICABOND**—Bonded Mica Splittings

DM-4-48



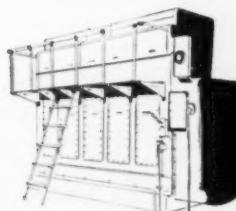
BRANCH OFFICES: NEW YORK 17 • CLEVELAND 14 • CHICAGO 11 • SPARTANBURG, S. C. • SALES OFFICES IN PRINCIPAL CITIES  
 WEST COAST REPRESENTATIVE: MARWOOD LTD., SAN FRANCISCO 3 • IN CANADA: DIAMOND STATE FIBRE CO., OF CANADA, LTD., TORONTO 8

**Continental-Diamond** FIBRE COMPANY

Established 1895.. Manufacturers of Laminated Plastics since 1911—NEWARK 41 • DELAWARE

You'll find unusual combinations of physical properties to meet your needs for improved product performance and appearance in Continental-Diamond high-strength plastics. Take *Celoron*, for instance, used in the gear shown here. This versatile material provides strength, resiliency, light weight, as well as moisture, heat, and corrosion resistance. Moreover, it is readily workable . . . can be tapped, drilled, shaped, milled, and threaded with ease.

And *Celoron* is but one of many C-D materials that can help to add new advantages to your product. Whatever your application, see Continental-Diamond first for recommendations that lead to higher product quality and appearance . . . lower fabrication costs. Your nearest C-D office has trained technicians with additional information that will interest you. Call or write, any time.



### Another C-D Case of Improved Performance

Making a huge, 2-foot timing gear for Diesel Locomotives always presents problems. The gear had to be strong enough to stand terrific strains — yet resilient enough to absorb shock. Dimensional stability, quiet performance, and easy machining were basic requirements. *Celoron* is proving its ability on applications like this, and a host of others where mechanical precision and rugged operation are needed.

*your partner in producing better products*

Available in SHEETS • RODS • TUBES

## Is **HANDLING** Cutting Down Your Profits?

\*M H is Mass Handling—the systematic movement of the most units, in the shortest time, at the lowest cost.



### Reduce Handling Costs with **TOWMOTOR MH\***

**W**hen excessive production costs and restricted productive output combine to cut down profits, better check your handling methods—and replace with Towmotor Mass Handling. You'll invest less and get more from Towmotor.

Operating costs? The men who have to make handling pay a profit have the answer: More professional handlers use Towmotor than any other fork lift truck.

Double and triple handling savings with Towmotor Accessories, such as the Unloader illustrated. If your handling problem cannot be solved with standard Towmotor Accessories, Towmotor engineers will help you work out special equipment to meet your specific needs. Write for details.

**SEND FOR FREE BOOK!** Learn how to analyze handling problems with the Towmotor Materials Handling Analysis Guide. Send for a free copy. Towmotor Corporation, Division 11, 1226 E. 152nd St., Cleveland 10, Ohio. Representatives In All Principal Cities In U. S. and Canada.



RECEIVING • PROCESSING • STORAGE • DISTRIBUTION

# A B MURRAY CO. INC.

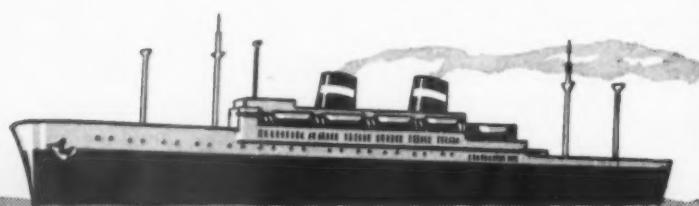
Boiler and Pressure Tubes  
Carbon Mechanical Tubing  
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Bundyweld and Bundy Electricweld Steel Tubing

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WRITE FOR MONTHLY TUBE STOCK BULLETIN

(Continued from page 178)

For instance electrical equipment with a silicone insulating material "may bring about a change in our thinking," he said. "Instead of wondering how much heat the apparatus will withstand before the insulation breaks down, we may wonder how much heat it will stand before the copper begins to anneal."

A glass laminate produced from silicone resins is the basis of such insulation. Layers of glass cloth soaked in the resin are stacked in a press between smooth hot plates, and subjected to heat and pressure. A piece of this, placed for a week in an oven heated to 250 degrees C. in the G. E. plastics laboratory showed improved mechanical and electrical properties at the end of the baking, the speaker said.

Silicone resins also will be used to make varnish, enamels and paints to finish refrigerators, stoves, laundry, dairy and hospital equipment. These finishes resist acids, alkalies, fresh or salt water, oils and weather.

"Because of the ability of the silicones to resist heat, white finishes, such as those on ovens, will not discolor even when subjected to temperatures of 485 degrees F. for long periods," Mr. Green stated.

Outlining the development of the silicones, Mr. Given said it was implemented by the search of the military services during the war for a material with heat and cold and chemical resistant qualities. Earlier studies had been made of silicon chemistry in England. About 76% of the earth's crust is composed of silicon and oxygen, the components of sand. In a new General Electric plant at Waterford, New York, silicon is ground and mixed with certain chemicals in a reactor. Gas is formed, from which a liquid is made, the basis of silicone products.

#### Polyorganohalogenopolysiloxanes!

Among these chemicals is one with a name of 31 letters, "polyorganohalogenopolysiloxanes." The vapor from one form of this liquid forms a sub-microscopic water repellent film. One of its uses is the treatment of radio and radar insulators for airplanes. If a high flying plane changes altitude quickly, condensed vapor on insulators is dangerous, causing electrical currents to throw radio and radar out of commission. Water on the surface of film-treated insulators stands up in beads, leaving dry spaces that high frequency currents cannot jump across.

Other uses of the water repellent are for windshields, camera lenses, textiles and paper. Porous porcelain filters so treated will permit the passage through them of compressed air, gasoline and solvents, but not water.

#### Clothing to Hold Press in Rainstorm

A silicone water repellent film may some day be used to treat cloth for clothing, Mr. Given said. "At the end of our walk in the rain we could just shake off the beads of water and find our clothes still neatly pressed."

Silicone oil, which does not thicken in low temperatures and thin in high ones,

(Please turn to page 182)



# What to do about tough jobs

PUT a Standard Red Shield Drill or Reamer at work on your tough jobs. It will demonstrate its merit there—in time saved—in cost saved—in uninterrupted production.

These tools are made and stocked in all the sizes and designs regularly used by industry.

They are distributed coast to coast by leading Mill Supply Distributors.

Our 66 years' experience in solving tough drilling problems is at your disposal without obligation. Write us today about your tough problems.

THE STANDARD TOOL CO.  
CLEVELAND

Warehouses: New York • Detroit • Chicago

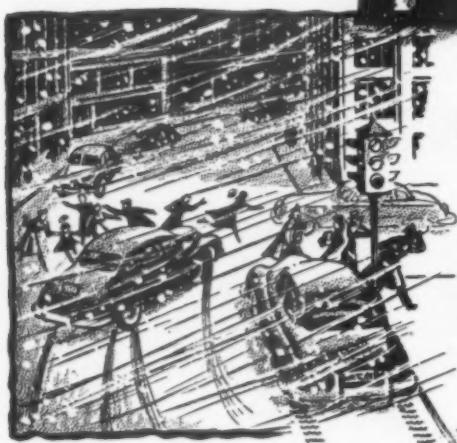


THE STANDARD LINE • Drills • Reamers • Taps • Dies • Milling Cutters • Special Tools

# CAN YOU GUESS THE ANSWERS?

## WHAT KIND OF LAWN GROWS NO GRASS?

In the English Church, the office of the bishop is referred to as "the lawn". We are more likely to think of a lawn as an inviting grass area-kept smooth and beautiful with a Pennsylvania Lawn Mower-another ACCO product.



## WHAT MAKES "STOP-AND-GO" LIGHTS SAFER?

When streets are slippery, you need chains for safe starts and stops. Ask for Weed American V Bar-Reinforced Tire Chains - made by ACCO's American Chain Division.



## WHAT IS "85 AND THREE 5's"?

An alloy consisting of 85% copper, 5% each of tin, lead and zinc is called "valve bronze". It is one of the materials used by ACCO's Reading-Pratt & Cady Division to make globe, gate and check valves.

**ACCO Products Include:** AMERICAN Chain • TRU-LAY and LAY-SET Preformed Wire Rope • TRU-LAY Cable and TRU-LOC Swaged Terminals for Aircraft • TRU-STOP Emergency Brakes • PAGE Wire, Chain Link Fence and Welding Rods • CAMPBELL Abrasive Cutters • READING-PRATT & CADY Valves and Fittings • READING Steel Castings • PENNSYLVANIA Lawn Mowers • MARYLAND Bolts & Nuts • "ROCKWELL" Hardness Testers • WRIGHT and FORD Hoists • HELICOID Pressure Gages • MANLEY Automotive Service Equipment • OWEN Silent Springs.

**ACCO**



**AMERICAN CHAIN & CABLE** BRIDGEPORT CONNECTICUT

(Continued from page 180)

is used for airplane hydraulic systems for operating controls, permitting smaller piping, less liquid, and reducing danger of fire from leakage because of its high flash point and low inflammability. It will flow at temperatures as low as 120 degrees below zero.

One of the largest uses of silicone products at present is a mold release agent, which permits rubber tires, rubber soles and heels and other products to come out of the molds much easier.

Silicone grease is used as a lubricant in chemical plants and for laboratory equipment, and is resistant to oxidation, remains stable at high temperatures, and resists most other chemicals. One of its curious properties is the ability to dissipate foam, demonstrated by Mr. Given with two glasses of ale, one of which was rubbed with a thin coat of grease.

Many military and industrial uses of silicone rubber were outlined by Mr. Given. A piece of this product which had been baked for 36 hours in an oven heated to 300 degrees F. was shown to be resilient and "could be baked that way for a year and still remain pliable."

Used for military searchlight gaskets, it cushions the glass lenses against shock and remains pliable at temperatures from 40 degrees below zero to 340 degrees above. It was used during the war on many planes for turbosupercharger gaskets.

Rubber gaskets for industrial heating ovens and the GE diesel locomotive were shown.



## FREE TRANSPORTATION MAP

A complete and factual transportation map of the United States, is available from the Wolverine Tube Division of Calumet and Hecla Consolidated Copper Co., 1411 Central Ave., Detroit 9, Mich., without obligation. The map includes highways, railroads, airlines, principal cities, towns and villages.



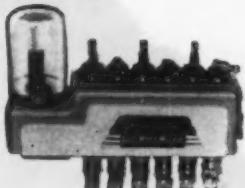
## FIRE RESISTANT HYDRAULIC FLUID

Development of a new fire-resistant hydraulic fluid for use in aviation was made public by the Douglas Aircraft and Monsanto Chemical Companies, the new fluid was described as a synthetic liquid combining most of the desirable characteristics of existing hydraulic fluids with fire-resistant qualities never before attained.

Notable characteristics of the new fluid in addition to its fire-resistant qualities, the announcement said, include a high viscosity index—with little change of viscosity over a wide temperature range—and a lubricity proven to greatly extend the life of pumps and other moving parts.

Under a joint agreement, Douglas will continue development work and inaugurate an operational test program, while Monsanto's manufacturing and distributing organization will have the assignment of producing and marketing the fluid, which will be known as Skydrol.

(Please turn to page 184)



MULTIPLE OILERS



## The Largest Selection Available Anywhere

**More and Better  
OILERS  
OIL and GREASE SHAFT SEALS  
MECHANICAL LUBRICATING DEVICES**

"Friction-Fighting Headquarters" for more than 40 years—That's how long Gits Bros. has devoted all its time, effort and facilities to solving and satisfying lubricating problems of every description.

These more-than-forty years of "Friction-Fighting" have developed the largest selection of really quality lubricating devices—a size and style for every need.

They're all top quality because they include such features as: tightly reclosing hinged covers, in which Gits pioneered; large capacity free-flowing designs machined from solid brass bar stock instead of stampings as found in many oilers; accurate die cut threads for snug leakproof mounting; and many others.

It will pay you to bring your lubricating problems to "Friction Fighting Headquarters" . . . to Gits Bros. where longest experience and the most complete range of styles are at your command.

Write today for complete information

**GITS BROS. MFG. CO.**

1840 South Kilbourn Ave.

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*Exclusive for over 40 years.*

DRIVE OILER



BALL VALVE



HIGH SPEED SEALS



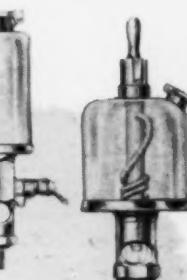
UNBREAKABLE CUP



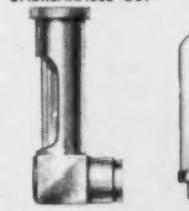
BRASS GAUGE



SIGHT GRAVITY FEED



WICK-FEED



BRASS GAUGE-ELBOW



THREADED-ANGLE

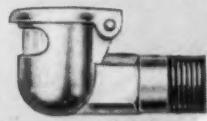


STEEL-BRAZED



GREASE CUP

TUBE OILER



SIGHT GAUGE



SCREW CAP



THREADED-VERTICAL

Visit Us—Booth 560  
at the Power Show, N. Y.  
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# CHAMPIONS

Fit Your  
Lamp Needs  
Like a Glove



**1. Quality** — Champion **Fluorescent** Tubes and **Incandescent** Bulbs are guaranteed to equal or exceed Federal Specifications. They are produced, inspected and tested by one of the largest and best-equipped manufacturers in the business — makers of dependable lamps for industrial service for nearly fifty years.



**2. Range** — Champion **Fluorescent** — daylight and white, for regular circuits, instant start circuits and low temperature service. Champion **Incandescent** — clear, inside frost, white bowl, silvered bowl bulbs, for general lighting service, spotlight, floodlight, reflector lamps and infra-red lamps.



**3. Service** — Champion's trained experts in the field are prepared to provide prompt, dependable recommendations on lighting and lamp applications to meet every industrial need.



**4. Economy** — Low overhead and streamlined distribution assures minimum lamp and lighting cost.



**5. Availability** — through carefully selected industrial distributors who know your needs and provide prompt, intelligent, low cost supply service.

May we put you in touch with

the Champion industrial distributor in your locality?

## CHAMPION LAMP WORKS

Lynn, Massachusetts

A DIVISION OF CONSOLIDATED ELECTRIC LAMP CO



## HARVEY CONOVER MAKING STUDY OF BERLIN AIRLIFT

Harvey Conover, president and treasurer of Conover-Mast Publications, publishers of *Purchasing Magazine*, *Aviation Maintenance and Operations*, *Mill & Factory*, *Liquor Store and Dispenser* and the *Conover-Mast Purchasing Directory*, recently returned from a several weeks' stay in Berlin where he made a technical study of the Berlin Airlift, in company with PURCHASING's Washington Editor A. N. Weckler, and others. Airline operators, aircraft manufacturers and other factors in the world of aviation are watching the Berlin Airlift with keen interest. The data developed by Mr. Conover and Mr. Weckler and members of the editorial staff of *Aviation Maintenance and Operations*, will be used in a special report in



HARVEY CONOVER

that publication on How the Airlift Works. This report will detail such factors as airports, communications, maintenance and servicing, cargo handling, flight scheduling, Berlin administration, and pilot-crew training, along with a cost analysis study.

Mr. Conover and members of the publication staff, were given *carte blanche* and the full cooperation of the Air Force Commanders, under instructions from Major General Wm. F. McKee, Assistant Vice Chief of Staff of the U. S. Air Force, in the development of fact and illustration material for the report which will be published in *Aviation Maintenance and Operations* early in 1949.

From a purely industrial standpoint, it is felt that the Airlift has advanced air freight handling methods and flight scheduling over difficult terrain, and under unsatisfactory conditions, years ahead of where they would have been under normal operating conditions. At present the Airlift consists of a ceaseless train of about 155 planes operating on a split second schedule, with landings every three minutes day and night.

### STOCK FIR DOOR STANDARD AVAILABLE

The commercial standard for stock fir doors, identified as CS73-48, has been announced by the National Bureau of Standards. Copies may be purchased from the Superintendent of Documents, Government Printing Office, Washington 25, D. C., for fifteen cents, (stamps not accepted).

# H & D BOXES

**DEVELOPED  
as a family group**



**EASY  
to display**

These corrugated packages reduce distribution costs, increase dealer good will, influence customer acceptance. They protect the merchandise in transit, are easy to pack, simplify inventory, save space, display well, facilitate identification and selection, lend themselves to successful merchandising, effectively promote the manufacturer's name. Yes, such a package definitely makes a good product better. Consult the H & D Package Laboratory on ALL packaging problems.

**HINDE & DAUCH**

*Authority on Packaging*

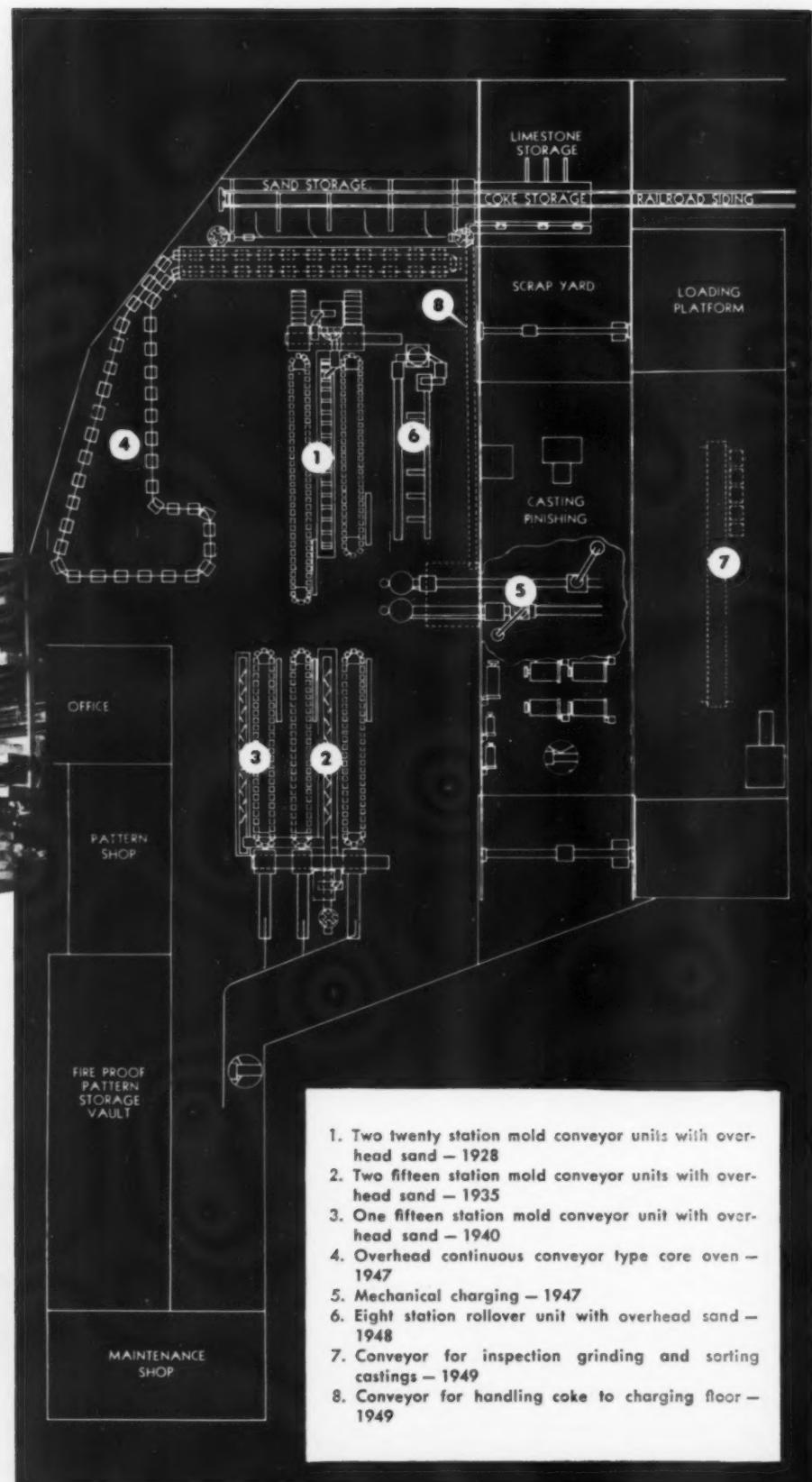
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MONTREAL, QUEBEC • RICHMOND 12, VA. • ST. LOUIS 15, MO.  
SANDUSKY, OHIO • TORONTO, ONTARIO • WATERTOWN, MASS.



# CELEBRATING OUR 20th Year

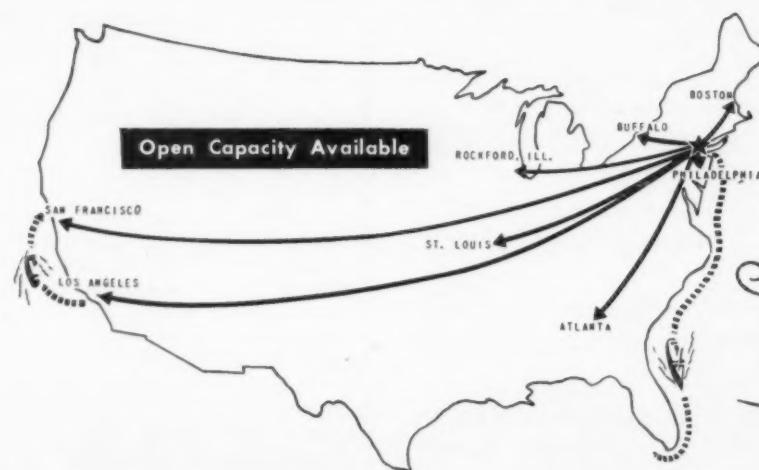
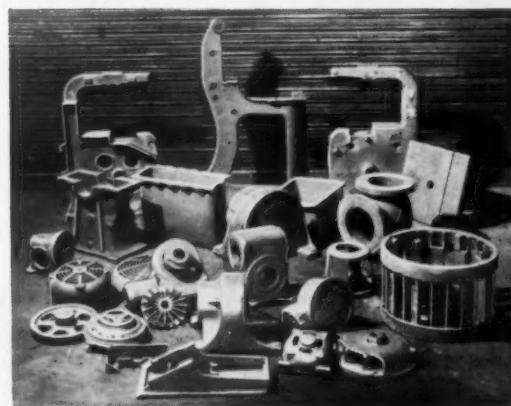


# OF MECHANIZED FOUNDRY OPERATION

The necessity for mechanization in a semi-jobbing operation was recognized early by The Laytham Foundry. The requirement for uniform quality grey iron and semi-steel castings in volume and at low cost is best met by this method. Building on our background of foundry experience since 1887, we have produced an operation that has served many of the leading users of iron castings in the country. Our plant covering over 100,000 square feet provides capacity of over 80 tons of castings per day.

## ● TYPES OF CASTINGS

VALVES AND FITTINGS	ELECTRIC MOTORS
MACHINE TOOLS	PUMPS
GEARS AND TRANSMISSIONS	RADIATION
OIL BURNERS	HEATING INDUSTRY



As a result of mechanization  
we currently ship not only to points  
on the east coast, but to midwestern,  
southern and west coast users.

THE AVERAGE CASTING  
TRAVELS 400 MILES

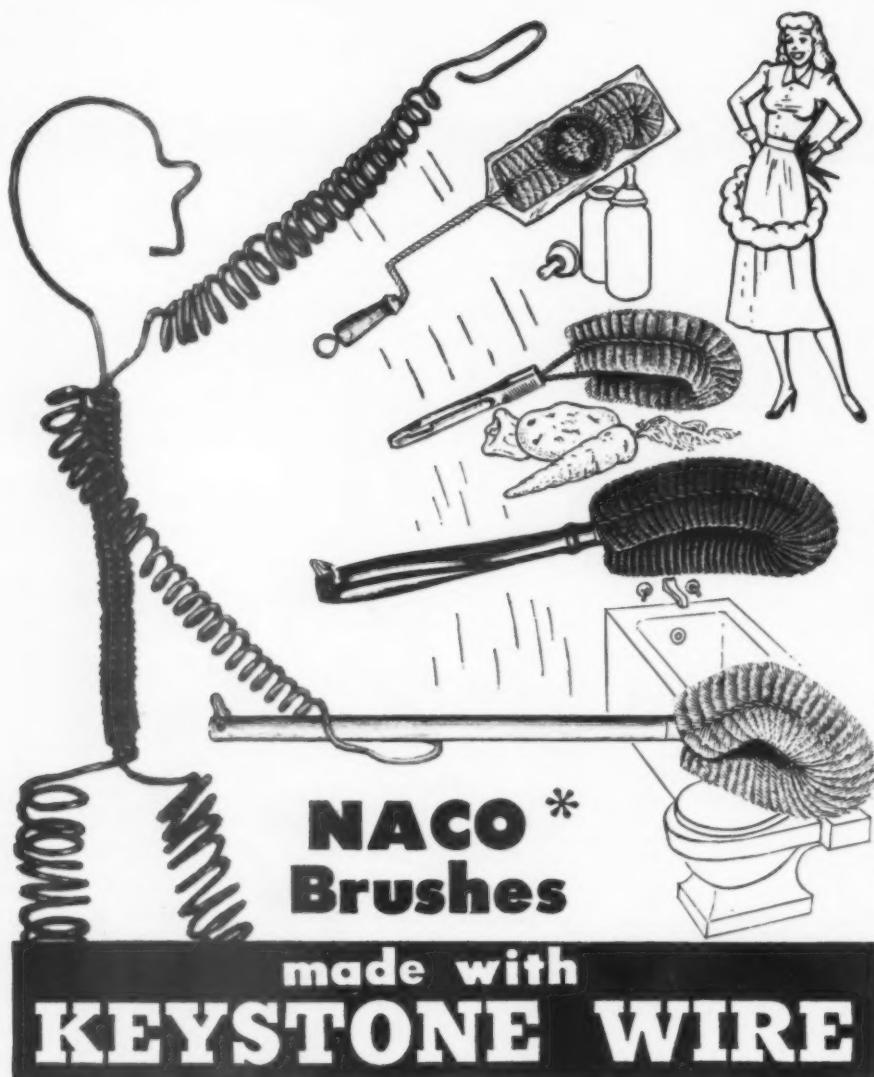
Established 1887

**WILLIAM P. LAYTHAM & SONS CO., INC.**

GREY IRON

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SEMI-STEEL



When you insist on the best in materials and workmanship, you'll make a hit with customers every time. Take the wire that holds the bristles so securely on NACO Brushes, for example.

Keystone BRUSH WIRE is specified by the manufacturer because its attractive silver-brite galvanized finish does not chip or peel when tightly twisted. Also, this quality wire has the proper ductility for accurate forming.

Yes, it's this critical choice of materials . . . plus expert craftsmanship that assures the National Brush Company of an established place in their market.

The Keystone organization takes pride in the fact that Keystone Wire is a recognized factor in the sound construction of NACO Brushes.

\*The National Brush Company  
Aurora, Illinois



SPECIAL ANALYSIS WIRE  
for all industrial purposes

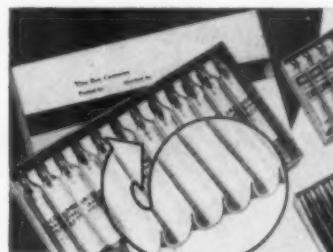
**KEYSTONE STEEL & WIRE CO., Peoria 7, Ill.**

#### NEW FOUR COLOR SOUND FILM AVAILABLE

A colorful four color sound film entitled "Indian Paint" is now available for public showing. The picture runs for thirty-five minutes, vividly portraying the making of steel from ore to finished product—wire rope. The story is described so that the film is both educational and entertaining. Arrangements can be made for the showing of the film, without obligation before any group or organization by writing to The Colorado Fuel and Iron Corporation, Wickwire Spencer Steel Division, Palmer, Massachusetts.

#### PREFORMED PACKAGING SUPPORTS ELIMINATE DIVIDERS

By means of cleverly contrived preformed separation-supports, ordinary cardboard boxes may now be converted into safe containers for packing and shipping ampules, fountain pens, perfume vials, paint tubes, lipstick, pencils, drills, medical supplies and other items requiring care and protection in packaging, according to Cardboard Service Co., Forest Park, Ill.



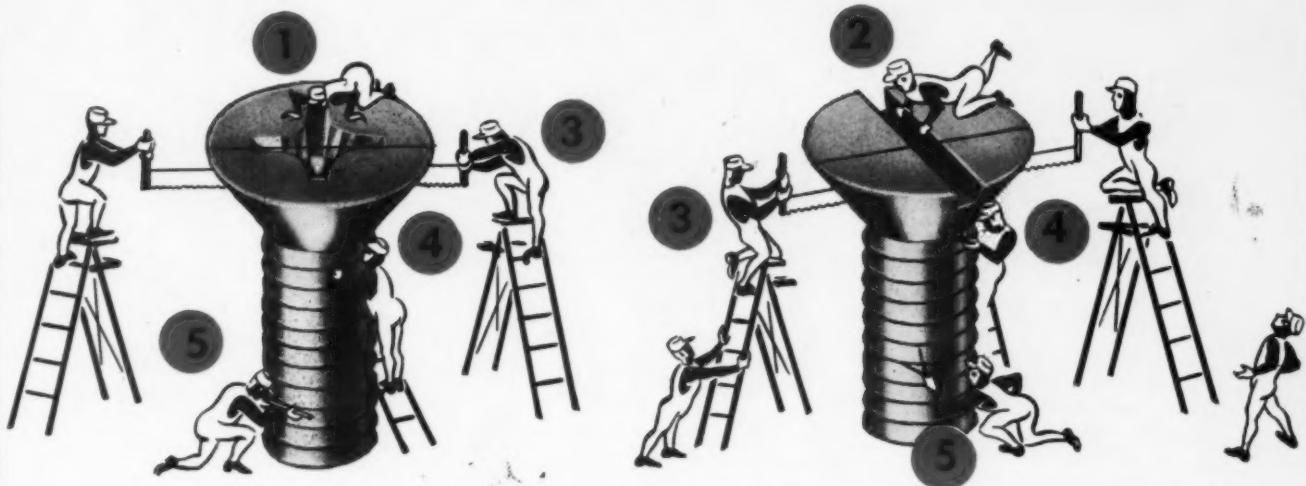
Called Quick-Pak Protectors, these separation-supports are made of cardboard and are formed by a special machine. The flutes or ribs provide amazing protection because of their great support strength and are more economical than the usual methods. They eliminate the need for all dividers, partitions and pieces in assembly of boxes.

Quick-Pak Protectors are secured in boxes by glueing. They are made with twelve space dividers, though fewer may be had if desired. They will hold, amply protected in separate compartments, any object of from approximately  $\frac{1}{2}$  to  $\frac{1}{8}$  inch in diameter. A set with twelve spaces approximates 7 to 9 inches in length. The width, however, is variable according to the length of the merchandise. These separators are preformed and put in position when boxes are made, thereby saving considerable packing time.

In addition to Quick-Pak Protectors' protective feature, another packaging innovation is announced which will cut down factory inspection time, checking upon receipt of merchandise, and will reduce inventory labors considerably. The box containing Quick-Pak Protectors also may have a slotted lid which enables anyone to check the merchandise instantly without breaking the seal.

Boxes with the Quick-Pak Protectors and the slotted lid may be made upon order, to meet the manufacturer's individual requirements.

(Please turn to page 190)



# QUALITY CONTROL

*insures Uniform*  *Screws.*

CORBIN-PHILLIPS  
SCREWS



CORBIN SLOTTED  
SCREWS



CORBIN SEMS



The uniformity you've come to expect in Corbin Screws is the result of Corbin's high standards of precision — its system of quality checking in every process — so that all parts are *interchangeable*.

From initial operation to packing, Corbin maintains uniform quality. Tools are replaced before worn — production is gauge-inspected at machines — samples are checked in the laboratory. Here are some of the Corbin Quality Control standards.

- 1 *Phillips Recesses* must be correct in depth and shape, centered uniformly.
- 2 *Regular Slots* must be precisely centered and "sharp-cut" to correct depth and width.
- 3 *Sample Cross-Sections* of headed blank must reveal smooth, unbroken grain, with regular lateral deflection in the upset head.
- 4 *Heads* must be true to type, concentric with body, smooth.
- 5 *Threads* must be sharp and accurate. Points, if specified, must be keen . . . properly centered.

Corbin Screws — all sizes and shapes — for wood, metal, or plastic — *always uniform*. Insist on Corbin.

S-86

## CORBIN SCREW DIVISION

THE AMERICAN HARDWARE CORPORATION • NEW BRITAIN, CONNECTICUT  
WAREHOUSES: NEW BRITAIN • NEW YORK • CHICAGO

This  
**FREE BOOK**  
shows how to save  
on NAME PLATES

Over 4500 shapes and sizes of name plates for which we have dies in stock are shown in this book. By choosing one of these designs you can effect a material saving. If you or your Engineering Department can make use of

it write us now for a copy of "Designs for Name plates"... Ecoa quality is enduring. Your request for a quotation is solicited—you will receive a prompt reply.



## ETCHING COMPANY OF AMERICA

1520 MONTANA STREET, CHICAGO 14, ILLINOIS, DEPT. C-12

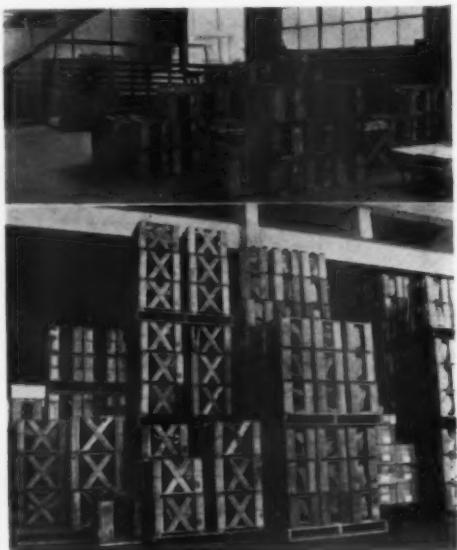
Metal Name Plates, etched or lithographed • Plastic Name Plates, Dials and Panels, lithographed or screened • Etched Metal Scales, Clock Dials, Instrument Panels, Art Novelties, Advertising Specialties • Etched Metal Panels for elevators and architectural uses.

SUBSIDIARY OF DODGE MFG. CORPORATION, MISHAWAKA, INDIANA

## FORK TRUCK SAVES TIME AND MONEY AT G-E LOS ANGELES WAREHOUSE

The most critical problem in warehousing today, in any part of the nation, is that of utmost utilization of space coupled with a speedy and efficient handling of the flow of materials. This has been found to be especially true in the fast-growing industrial plants in Western states. To aid in coping with this problem the General Electric Apparatus Department warehouse in Los Angeles recently installed a storage battery-powered fork truck, and already reports that excellent results have been obtained.

With a rated capacity of 4,000-lb. and a high-lift feature, the many and varied ways in which the truck is used seemingly is limited only by the ingenuity and resourcefulness of those persons in charge of its operation.



Before and after storage. The fork truck handling saves time, labor and warehouse space.

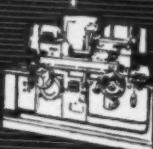
The unloading of carloads of material is the principal task assigned the truck. With pallets it is now a comparatively simple task to unload and handle large quantities of materials which are shipped in uniform size, standard packages. While considerable savings of both time and money have been realized in the handling of these standard packages, it is in the unloading, handling and storing of large, heavy, and bulky motors and transformers that the fork truck has, to quote one of G-E's supervisory personnel, "proved its true indispensability."

Formerly these heavier items were taken from cars by means of pinch bars, rollers and a winch to drag them on to the receiving dock and under a crane. An average motor, weighing approximately 3,000-lb., would require the labor of from three to five men for an elapsed time of 20 minutes before it could be placed under the crane, and an additional five to ten minutes to rig the crate with cables and to replace the motor in stock or in the shipping bay.

(Please turn to page 192)



GRINDING WHEELS



GRINDING MACHINES



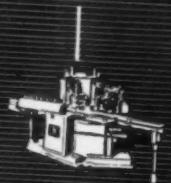
REFRACTORIES



NORBIDE



NON-SLIP FLOORS



LABELING MACHINES



ABRASIVE PAPER  
AND CLOTH . . .  
SHARPENING STONES



## YOUR KITCHEN DEPENDS ON ABRASIVES

. . . and REFRactories

**T**AKE the sheet steel and stainless steel of refrigerator, range and cabinets—Norton wheels grind defects from the steel billets; Norton grinding wheels and machines surface the rolls that roll the billets into sheets; Norton abrasives polish the sheets.

The dependable performance of refrigerator, dish washer and other operating appliances comes from the precision produced by Norton grinding wheels and machines, and the still further precision produced by Norton lapping machines.



The gleaming porcelain enamel of refrigerator, range and sink is produced in furnaces lined with Norton high-temperature refractories. And Norton refractories have an important function in the heating units of your electric range.

**NORTON**

**NORTON COMPANY • WORCESTER 6, MASS.**

(Behr-Manning, Troy, N. Y. is a Norton Division)

**C  
L  
A  
R  
K**

MATERIAL HANDLING *News*

a BIGGER  
exhibit  
of BETTER  
machines  
TO DO MORE WORK  
AT LOWER COST

*the Third  
National  
Materials  
Handling  
Exposition*

The 1949 Exposition will be held in Philadelphia January 10 through 14 and will constitute a broad view and preview of "industrial history in the making." It will be the most convincing demonstration of all time that the Science of Materials Handling is eternally new—that it is a never-ending process of evolving new and better methods and equipment to the end that our National economy can shake off the shackles of old, inefficient and time-consuming practices which have become prohibitively costly both in human energy and in dollars.

**CLARK** ELECTRIC AND GAS POWERED  
FORK TRUCKS  
AND INDUSTRIAL TOWING TRACTORS



INDUSTRIAL TRUCK DIV., CLARK EQUIPMENT COMPANY BATTLE CREEK 23 MICH.  
REPRESENTATIVES IN PRINCIPAL CITIES THROUGHOUT THE WORLD  
AUTHORIZED CLARK INDUSTRIAL TRUCK PARTS AND SERVICE STATIONS IN STRATEGIC LOCATIONS

(Continued from page 190)

Now, with the battery-powered fork truck to replace the older, more cumbersome method, these crated motors and transformers are removed from the car and placed in stock in two or three minutes, requiring the labor of only the truck's operator in most instances. Heavy reels of cable and other miscellaneous and troublesome items are handled with equal ease.

Also, before the fork truck was installed, large quantities of fractional horsepower motors; fluorescent lamp ballasts, and luminescent tube transformers were loaded on to skids in cars, transported into the warehouse on hand trucks and then stacked in piles by hand. This operation was both very slow and very expensive. When shipments of such items were heavy it was almost always necessary to hire professional stevedores to augment the regular warehouse crew.

The average time to unload a carload of fluorescent lamp ballasts, for instance, was from seven to nine hours by this old method. Four men were used in the car; one man shuttled loaded skids from



Savings up to  $2\frac{1}{2}$  man-hours per unit load are effected where transformers, motors, switchgear and such equipment are unloaded and warehoused.

car to warehouse, while in the latter three men were utilized to stack. Now, with fork truck and pallets, four men are required, and a carload of ballasts is unloaded and warehoused in four hours. The work entails movement of some 1,000 cartons, the contents of which weighed upwards of 75,000-lb. The belief is held by the people at G-E's Los Angeles warehouse that when ballasts, small motors, etc., are shipped—as it is planned they will be in the not too distant future—in palletized unit loads from the factory, it will be possible to unload and warehouse a carload in approximately an hour using only the fork truck and its operator.

When the fork truck was first placed in operation it was found necessary to rearrange a large portion of the usable warehouse storage space. Wider aisles had to be provided for traverse and maneuver by the truck. While this caused a loss of actual floor footage, this lost space was more than regained through the use of vertical storage area which hitherto had been a total loss.

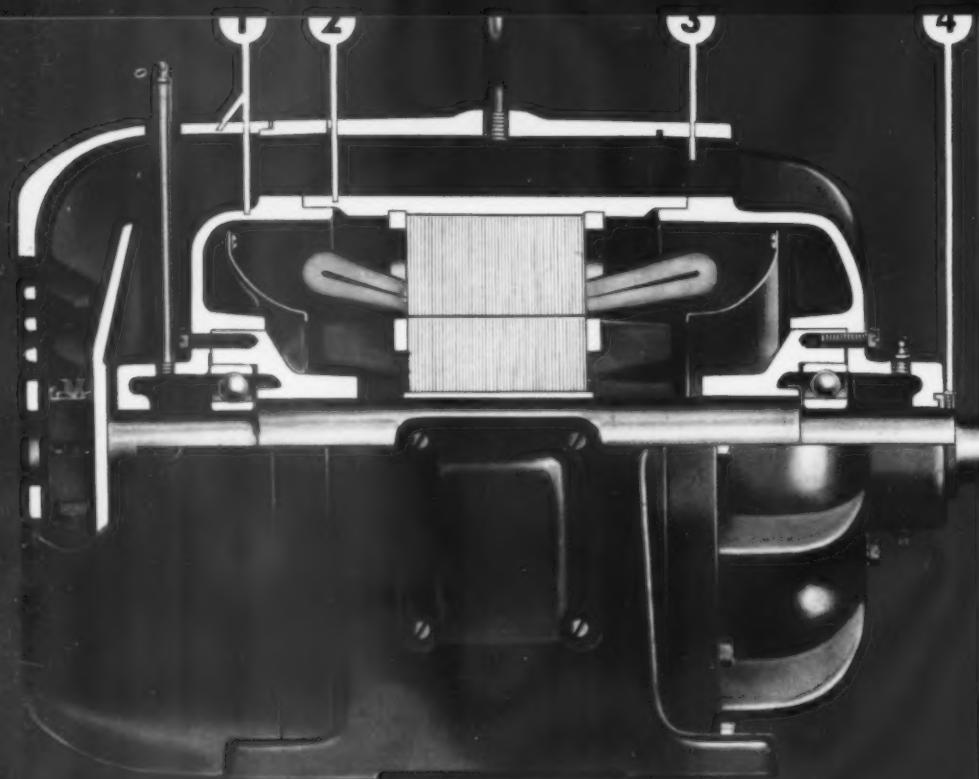
(Please turn to page 196)



**YOU CAN PUT A  
TRI CLAD  
MOTOR ANYWHERE**

GENERAL  ELECTRIC

HERE'S  
WHY



The standard totally enclosed Tri-Clad features a cast-iron double-wall structure (1) that keeps outside air from electrical operating parts . . . machined-fit end shields (2) . . . large air passages (3), easy to clean . . . rotating labyrinth seals (4) that keep foreign matter from working in around the shaft. Note, too, the new corrosion-resistant G-E Textolite cooling fan is now standard on all 1- to 15 hp TEFC Tri-Clads.

## You can put a *TRI CLAD* motor anywhere

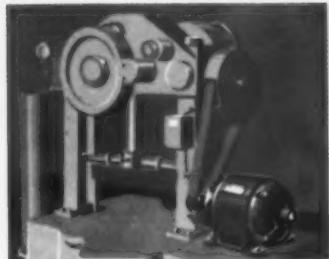
**YES SIR!** The standard *Tri-Clad* open motor is a *cast-iron, dripproof* motor you can put anywhere that *any* open motor can be used—and in a lot of places where other open motors couldn't take it.

What's more, for the really dirty jobs—where air is laden with dust, or corrosive fumes—where metal chips and cutting fluids abound—the *Tri-Clad* totally enclosed motor gives you more protection, *inside and out*, than any other make of motor you can buy.

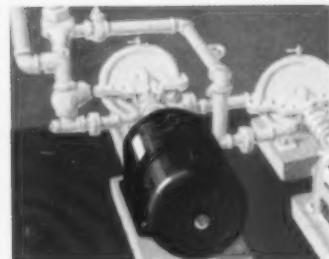
1,720,000 *Tri-Clad* motors, operating in every conceivable kind of plant, prove the far-reaching advantages of cast-iron construction . . . superior resistance to corrosion . . . rigidity that makes for permanent shaft alignment . . . inherent damping action that minimizes noise and damaging vibration. These motors prove, too, that *Tri-Clad* double-end ventilation simply has no equal for prolonging an open motor's useful life. Providing high-volume, relatively low-velocity cooling, this ventilating system keeps *Tri-Clad* motors uniformly "air-conditioned".

**WANT MOTORS THAT CAN REALLY TAKE ABUSE?** *Tri-Clad* motors in nearly all types and ratings are available for **IMMEDIATE SHIPMENT**. Contact your nearest G-E Office or write Apparatus Dept., General Electric Company, Schenectady 5, N. Y.

There's a *Tri-Clad* motor for every industrial need!



G-E open (driproof) induction motors for constant-load, constant-speed applications. From 1 to 2000 hp.



G-E totally enclosed motors for outdoor operation, in abrasive dusts, or corrosive fumes. From 1 to 1000 hp.



G-E gear-motors for low-speed operation. A normal-speed motor with built-in reduction gear. From  $\frac{1}{6}$  to 75 hp.



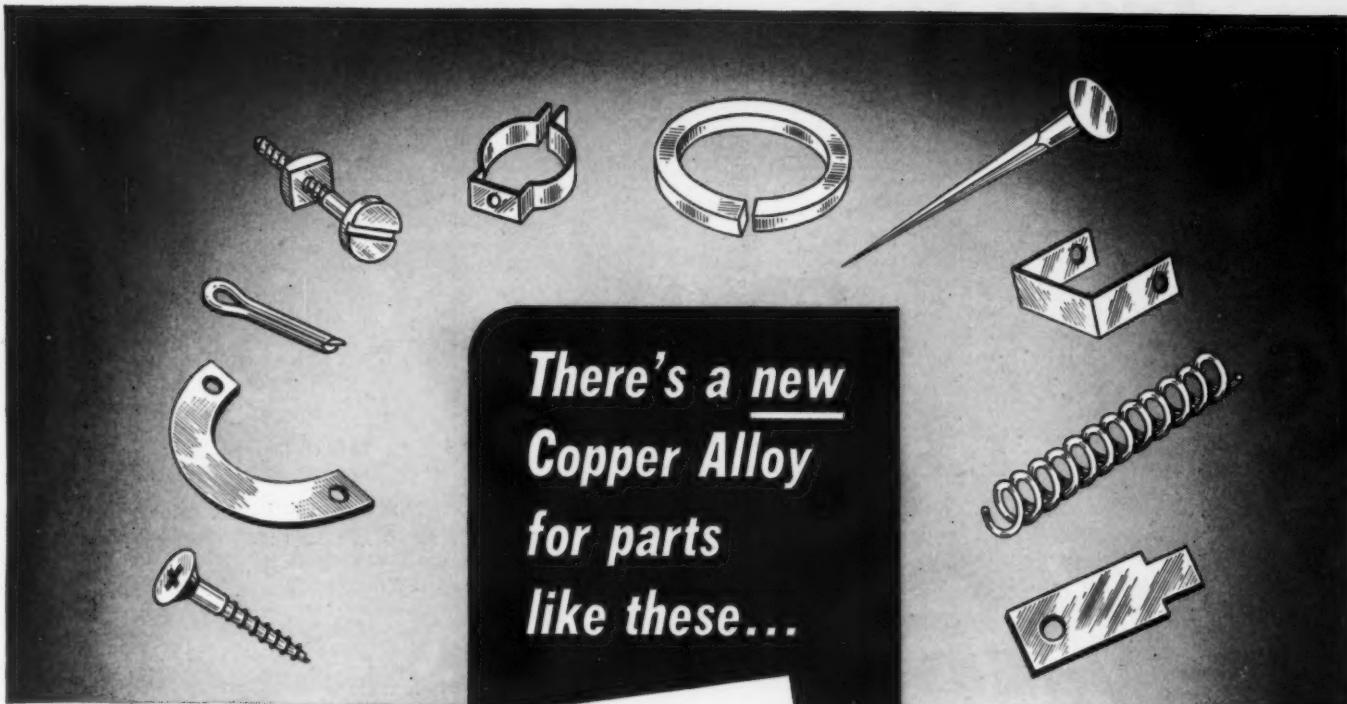
G-E synchronous motors for maintaining exact speeds or for correcting power factor. From 20 to 1000 hp.

GENERAL  ELECTRIC

YOU CAN'T BEAT

**TRI CLAD**

EXTRA  
PROTECTION



*There's a new  
Copper Alloy  
for parts  
like these...*

It combines tensile strength and conductivity to a unique degree...is unusually malleable...is resistant to stress corrosion and offers excellent resistance to creep at elevated temperatures.

Typical parts made from round or flat wire

## CHASE patented PHOSNIC® BRONZE

HERE'S a radically different type of copper alloy that you'll want to investigate—PHOSNIC BRONZE, made *only* by Chase.

PHOSNIC BRONZE is exceptionally malleable, permitting severe cold heading even after hard drawing to attain high strength. In this condition its resistance to stress corrosion is outstanding. Special spring temper wire attains a tensile strength of 120,000 psi—yet even then has an electrical conductivity of 50% IACS with correspondingly high thermal conductivity. This combination of strength and conductivity, characteristic of Phosnic Bronze, is unmatched by any other commercial alloy.

PHOSNIC BRONZE is of particular interest where phosphor bronze, silicon bronze and cartridge brass have been used in the past. Phillips head screws, nuts, switch parts, fuse clips, lock

washers, cotter pins, springs—these are just a few of the potential applications.

PHOSNIC BRONZE is supplied in the form of rod, round wire, rolled flat wire and tube—in tempers ranging from age-hardened condition up to and including special spring.

Mail the coupon for the full story of this remarkable new copper alloy.



Chase Brass & Copper Co., Dept. P128  
Waterbury 91, Conn.

Gentlemen:

Please send me your free book, "Phosnic Bronze."

Name\_\_\_\_\_

Position\_\_\_\_\_ Company\_\_\_\_\_

Street Address\_\_\_\_\_

City\_\_\_\_\_ State\_\_\_\_\_

# Chase

WATERBURY 91, CONNECTICUT



*the Nation's Headquarters for  
BRASS & COPPER*

SUBSIDIARY OF KENNECOTT COPPER CORPORATION

THIS IS THE CHASE NETWORK... handiest way to buy brass

ALBANY ATLANTA BALTIMORE BOSTON CHICAGO CINCINNATI CLEVELAND DETROIT HOUSTON INDIANAPOLIS KANSAS CITY, MO. LOS ANGELES MILWAUKEE MINNEAPOLIS NEWARK NEW ORLEANS NEW YORK PHILADELPHIA PITTSBURGH PROVIDENCE ROCHESTER SAN FRANCISCO SEATTLE ST. LOUIS WATERBURY ((Indicates Sales Office Only))

*from top*

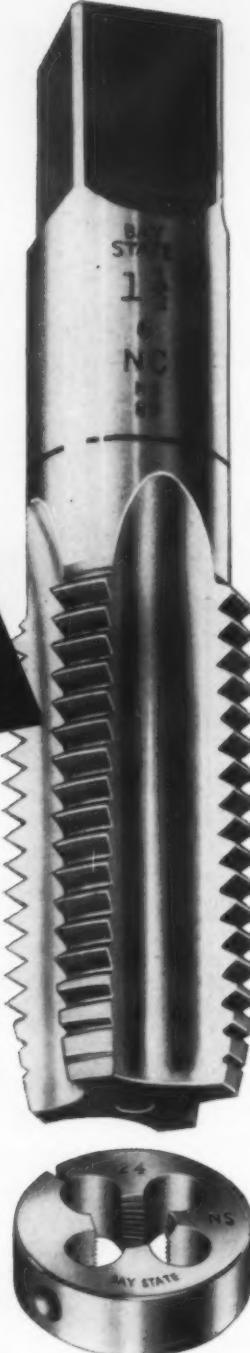
*TOP  
QUALITY*

*to bottom*

# BAY STATE *taps and dies*

ON NEARBY SHELVES OF YOUR INDUSTRIAL  
SUPPLY DISTRIBUTOR

**BAY STATE TAP & DIE CO.**  
MANSFIELD, MASS.



(Continued from page 192)

In addition to unloading carloads and warehousing the contents, the truck is used, in Receiving, to unload L.C.L. shipments; in warehouse routine, to fill large or heavy orders for shipment and also to assist in the ever-present task of re-arranging stock, and other "housekeeping" procedures; and finally, in Shipping, to expedite the loading of trucks so as to speed orders on the way to customers.

Supervisory personnel at the G-E Los Angeles warehouse stated that they are "more than satisfied" with the battery-powered truck for this application.

### KIDDE INTRODUCES NEW POWDER EXTINGUISHER

A dry chemical powder extinguisher designed for use against flammable liquid and electrical fires in industrial plants, oil refineries, pipelines, airports and garages has been developed by engineers of Walter Kidde & Company, Belleville, N. J.



The new extinguisher, made in 20-pound and 30-pound capacities, contains a special dry powder mixture that will not pack or obstruct discharge, and the unit possesses several other advantages over powder type extinguishers formerly available.

Convenient, one-hand operation with trigger-finger control, similar to other Kidde carbon dioxide portable extinguishers, is combined with overall light weight construction to make for speed and effectiveness in combatting Class B and C fires.

### IMPROVED 10-WATT PILOT LAMP ANNOUNCED BY G-E

A new and improved 10-watt pilot lamp, designed to meet the demand of electric range and radio manufacturers for a lamp which would provide years of life under the severe conditions of shock and vibration encountered in this service has been developed by General Electric's Lamp Department, Nela Park, Cleveland, O.

Claiming that the new lamp, the 10C7DC, by virtue of a special filament and double contact bayonet base, meets severe service requirements, the Lamp Department recommends that manufacturers of radios and range adopt it in place of 7C7 or 10C7 candelabra screw base lamps. The lamp overcomes the tendency of its predecessors to loosen in the socket.

The new lamp is not a substitute for T7 or T8 home appliance lamps. It is used on 115-125 volts, produces approximately 40 lumens of light.

(Please turn to page 198)

# FEDERAL STANDARD D-C POWER SUPPLIES...

**now in stock and ready for quick delivery**

These Federal standard D-C Power Supplies are now available to meet a wide range of industrial and laboratory requirements for both filtered and unfiltered D-C power. All Federal D-C Power Supplies are powered by Federal long-life Selenium Rectifiers with no expendable parts that demand frequent replacement. Operation is dependable and economical. Federal D-C Power Supplies are conservatively rated. Heavy duty Selenium Rectifiers are able to withstand momentary overloads . . . provide D-C power immediately without heat-up period . . . operate quietly and efficiently with practically no maintenance. For prices and information on other Federal standard D-C Power Supplies, write Department E834.

## FILTERED



## UN-FILTERED



## RATINGS

FILTERED						UNFILTERED					
Code Number	A-C Input		D-C Output			Code Number	A-C Input		D-C Output		
	Volts	Phase	Cycles	Volts	Amps.		Volts	Phase	Cycles	Volts	Amps.
1 FTR 3093-AS	115	1	60	12	3	6 FTR 3300-DS	115	1	60	2-32	50
2 FTR 3128-BS*	115	1	60	22-30	10	7 FTR 1342-AS	115	1	50/60	6	4
3 FTR 3246-BS	115	1	60	6	10	8 FTR 3341-AS	115	1	50/60	28	5
4 FTR 3138-BS	115	1	60	12	5	9 FTR 3339-BS	115/230	1	50/60	6-24	18
5 FTR 3185-AS	115	1	60	12	7.5	10 FTR 3340-BS	115	1	50/60	5-70	12
*Filtered and regulated											



*Federal Telephone and Radio Corporation*

KEEPING FEDERAL YEARS AHEAD...is IT&T's world-wide research and engineering organization, of which the Federal Telecommunication Laboratories, Nutley, N. J., is a unit.

SELENIUM and INTELIN DIVISION, 900 Passaic Ave., East Newark, New Jersey

In Canada: Federal Electric Manufacturing Company, Ltd., Montreal, P. Q.  
Export Distributors: International Standard Electric Corp. 67 Broad St., N. Y.

# Now—A Unique New Industrial Tire Development



## U. S. INNACUSH

Here is a completely unique development in the solid tire field—the U. S. Innacush Tire. Its softer inner cushioning cuts vehicle maintenance costs—lessens driver fatigue—reduces breakage. Yet, combined with the tough, wear-resisting outer tread, it provides *solid-tire* carrying capacity and long life. You'll want the Innacush on your powered industrial trucks.

**Made only by U. S. Rubber**

Call your U. S. Distributor.

He's listed in your phone book.

### U. S. INDUSTRIAL TIRES ARE

1. Load Rated for every job.
2. Specified as original equipment on leading industrial trucks and tractors.
3. Made by the manufacturers of famous U. S. Royals.



**UNITED STATES RUBBER COMPANY**  
SERVING THROUGH SCIENCE

### PROGRAM FOR MILLION BARRELS DAILY OF OIL-FROM-COAL; BUREAU OF MINES SEES INVESTMENT OF 8.7 BILLION

A program for the production of one million barrels daily of synthetic oils from coal was outlined by J. D. Doherty, Assistant Chief of the Office of Synthetic Liquid Fuels, Bureau of Mines, at the 11th Annual Fuels Conference of The American Society of Mechanical Engineers and the American Institute of Mining and Metallurgical Engineers here today.

Describing work in research and development already under way by the Bureau of Mines and others in the production of synthetic liquid fuels, Mr. Doherty called for prompt erection of at least some commercial plants because "synthetic liquid fuels are not going to do us very much good in an emergency if we have to start from scratch."

Based on estimates of the Bureau of Mines, the program calls for a total investment of 8.7 billion dollars, including plants, mines and product pipe lines.

The million barrels per day of oil-from-coal would consist of the following products: liquified propane and butane (L.P.G.) 86,000 barrels; high grade motor gasoline, 648,000 barrels; diesel and furnace oil, 266,000 barrels. Heavy fuel oil, which could be obtained more cheaply from shale, was not included. Aviation fuel requirements, "which would skyrocket in the event of a national emergency," could readily be produced by coal hydrogenation, one of the two principal processes employed, the speaker said.

The cost of production, per gallon of total products, would be 12.4 cents, or 12.6 cents, depending on the process used.

#### Synthetic Oil "Not Far Off"

Even though geological estimates of coal reserves are constantly being revised, "no reasonable revision could alter the conclusion that coal is our outstanding fuel reserve and that coal can furnish oil at present rates of consumption—2 million barrels per year—for centuries to come," Mr. Doherty declared. "Moreover, the day when synthetic oil from coal will begin to supplement our petroleum supplies does not appear to be far off."

Estimated liquid fuels resources of the United States are as follows: coal and lignite, 87 per cent or 2,600-billion barrels; oil shale, 9 per cent or 270-billion barrels; petroleum and natural gas liquids, 2.9 per cent or 86-billion barrels; natural gas, 1.6 per cent or 48-billion barrels.

Domestic production of crude oil cannot be expected to meet future demands. Alternatives to a synthetic supply, which are the curtailment of oil consumption, and increasing oil imports, are expedients for the immediate future but will not solve the long range problem he said.

"Although synthetic fuels cannot relieve any oil shortages that might develop within the next year or two, an immediate start toward a substantial synthetics industry to supplement petroleum could help relieve shortages several years hence. By assuring ample future supplies, such a

(Please turn to page 202)

# Happy thoughts for holiday profits

**LOOK BEYOND** the "yippees" of delight that greet these toys on Christmas Day . . .

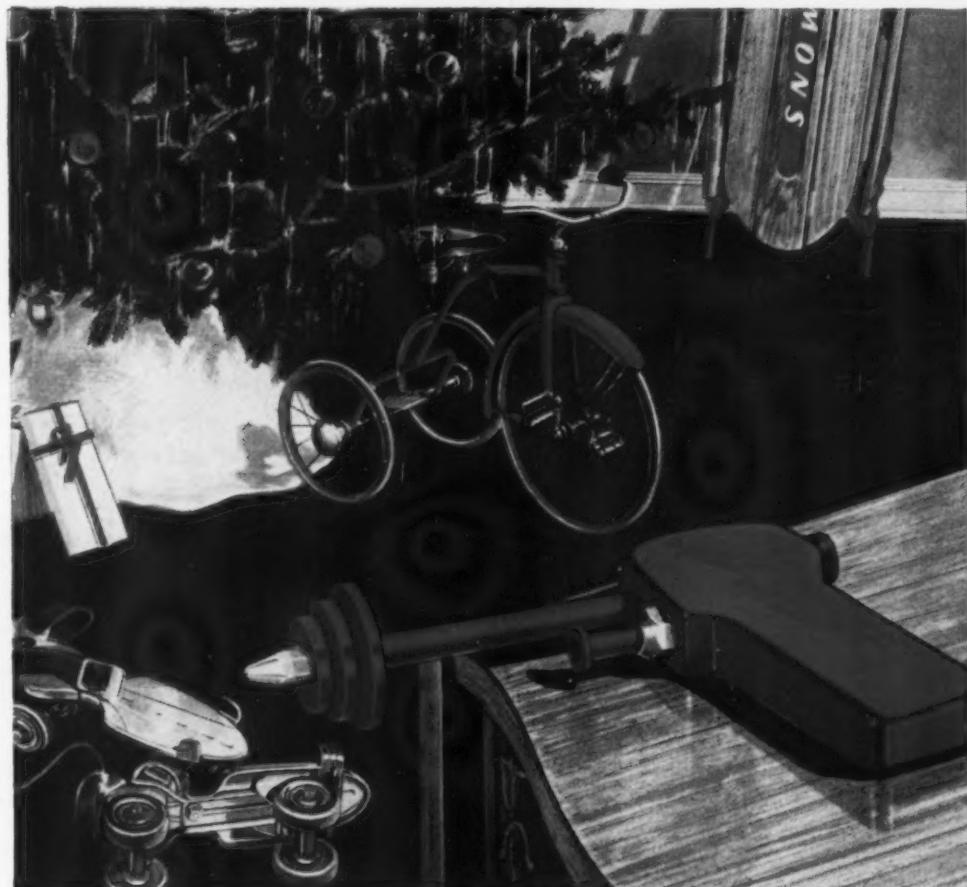
You'll find their elated manufacturers closing one of their biggest, brightest seasons.

For each toy, in its way, is better, stronger, safer and a bigger hit than one of other years, thanks, in part, to the happy thought of using Bundy Tubing.

See the barrel of the water pistol . . . and

the sled runners? Or the spacers between the roller skate wheels and the tricycle frame? These are only hints of how Bundy helped spell bigger holiday sales.

Better check into Bundy yourself. You'd be amazed at where you can use this miracle tubing of industry. The examples at the right range from some standard uses of Bundy to some new ideas well worth pondering. Study them carefully.



## BUNDY TUBING

★★ ENGINEERED TO YOUR EXPECTATIONS ★★

\*REG. U.S. PAT. OFF.

**6** **WHATEVER YOUR** design or production problem, whatever the idea you may be wrestling with, there's more than an even chance that a simple application of Bundy Tubing can help you put it over, and lead you to a better product, made faster, more easily and at less cost. Why not see what Bundy engineers can do. Just call or write: *Bundy Tubing Company, Detroit 14, Mich.*

**Bundyweld** Tubing, made by a patented process, is entirely different from any other tubing. It starts as a single strip of basic metal, coated with a bonding metal.

This strip is continuously rolled twice laterally into tubular form. Walls of uniform thickness and concentricity are assured by close-tolerance, cold-rolled strip.

Next, a heating process fuses bonding metal to basic metal. Cooled, the double walls have become a strong, ductile tube, free from scale, held to close dimensions.

Bundyweld comes in standard sizes, up to  $\frac{5}{8}$ " O.D., in steel (copper or tin coated), Monel or nickel. Special sizes can be furnished to meet your requirements.

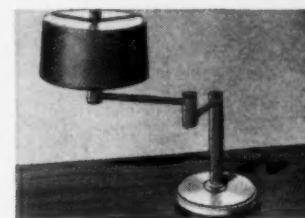
**Bundy Tubing Distributors and Representatives:** Cambridge 42, Mass.: Austin-Hastings Co., Inc., 226 Binney St. • Chattanooga 2, Tenn.: Pearson-Deakin Co., 823-824 Chattanooga Bank Bldg. • Chicago 32, Ill.: Lapham-Hickey Co., 3333 W. 47th Place • Elizabeth, N.J.: A.B. Murray Co., Inc., Post Office Box 476 • Philadelphia 3, Penn.: Rutan & Co., 404 Architects Bldg. • San Francisco 10, Cal.: Pacific Metals Co., Ltd., 3100 19th St. • Seattle 4, Wash.: Eagle Metals Co., 3628 E. Marginal Way • Toronto 5, Ont., Canada: Alloy Metal Sales, Ltd., 881 Bay St. **Bundyweld** nickel and **Monel** tubing is sold by International Nickel Company distributors in all principal cities.



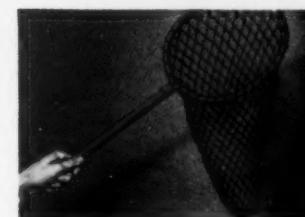
**1** **Double-walled**, tough and vibration-proof, Bundyweld\* steel tubing is in hydraulic brake line systems of 95% of today's trucks and cars. If your pressure lines must take a beating, better think of Bundy, too.



**2** **Bundy** is a top performer in the machine tool field, too . . . as a tubing for coolants, lubricants and pressure lines. Bundyweld\* is double-walled from a single strip. Available in steel, Monel or nickel.



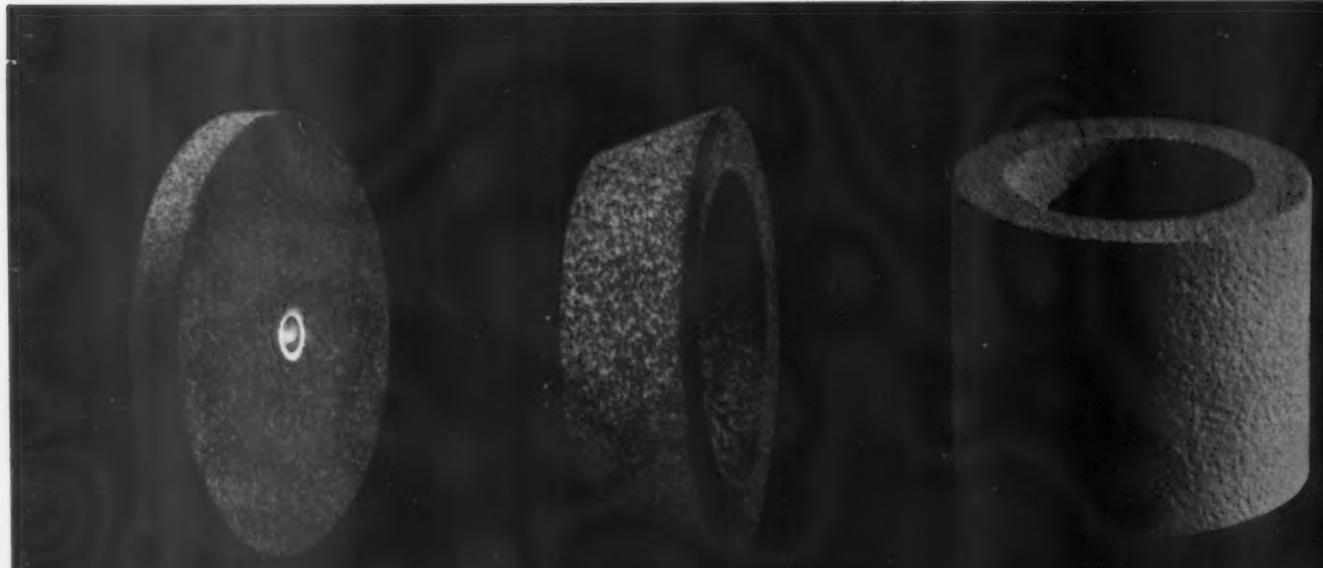
**3** **Wherever** it's used, from umbrella stems to lamp shade frames and lamp arms, Bundy gives a plus in profits or design. It's thinner-walled, lightweight, machineable, ductile. Which reminds us . . .



**4** **If you make** fishing tackle, why not check into Bundy for landing net frames? We've never seen Bundy used this way, but it's a suggestion that might start you toward an even sturdier, better product.



**5** **Or here's** another idea: doll carriage chassis of Bundy for still more toy sales next Christmas. If you're interested, we'll be glad to work with you. No other tubing offers so many profitable possibilities.



## Trim high grinding costs for Christmas

**Grinding costs** can take a trimming this Christmas season and for many seasons to come. If you would like to shape your production costs by paring down your dressing expenses, sprucing up high stock removal and long wheel life, Peninsular engineers may be able to help you.

**Manufacturers** in over fifty industrial fields have been shown how to trim down grinding costs by Peninsular consultants. Since 1889, Peninsular has had a program of study and experimental research designed to help them with their particular grinding problems. *Why not call on Peninsular engineers to study your grinding job?*

First, they will conduct an on-the-grounds analysis of your grinding machines, the methods you employ, and the materials you grind. Correct wheel formulas are then drawn up and presented to you. Our engineers will include recommendations developed to reduce your costs and increase your production.

**Thought for any season:** Every Peninsular grinding wheel is specifically designed for a particular grinding job.

**The Peninsular Grinding Wheel Co.**, 729 Meldrum Avenue, Detroit 7, Michigan. **Sales Offices:** Chicago, Philadelphia, Buffalo, Cleveland, Pittsburgh, Houston, St. Louis, Cincinnati.

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INDIVIDUALLY  ENGINEERED  
GRINDING WHEELS  
SINCE 1889

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This Christmas tree, made of standard sizes and types of Peninsular grinding wheels, gained such favorable comment in its original appearance that it is again reproduced with season's greetings from Peninsular.

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for  
Spring  
Buyers!*



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A lot of useful, usable information in a few pages. Tells in plain language what a good spring is and how to get it without excessive cost. Shows principal types of springs and spring ends and gives names commonly used to identify them.



Gentlemen: Please send \_\_\_\_\_ copies of your new "BRIEF GUIDE for SPRING BUYERS" to

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CITY \_\_\_\_\_ STATE \_\_\_\_\_ (P)

(Continued from page 198)

start would permit sound planning by industries dependent upon oil and maintain or restore the confidence of prospective customers for oil-consuming equipment."

Geological and economic factors in the program for a million barrels a day of oil-from-coal were analyzed by Mr. Doherty, and technological aspects were described in detail. A table of fuel and water requirements for a 10,000 barrel-per-day plant was included.

### Coal Drawn From East and West

About half of the production would be from coal east of the Mississippi River and half from coal and lignite west of the Mississippi. The requirement would be 575,000 tons per calendar day. This would amount to 210 million tons per year, a 34-percent increase over 1947 production. Of this consumption, 213,000 tons per day would be bituminous coal from the East; 362,000 tons would be coal and lignite mined in the West.

In the western section, most of the coal would have to be obtained by opening new mines. In the East, existing coal mining capacity could produce most of the coal required by additional operating days and by continued mechanization.

In general the oil would be produced about equally by the gas synthesis (Fischer-Tropsch) method which was developed in Germany and modified and improved in this country; and the coal hydrogenation process.

"To produce the proposed 1 million barrels per day from coal and lignite would require a total investment of 8.7 billion dollars," Mr. Doherty stated. "This is a tremendous amount of money, but it can be compared with the capital investment of 7.5-billion dollars that the petroleum industry anticipated would be spent on domestic production, transportation, refining, and marketing facilities in the five years from 1947 to 1951 chiefly to maintain present production rates."

The steel required is estimated at 6,300,000 tons with peak requirement five or six years after starting the program. The operating force would be 160,000 men including all miners.

The Bureau of Mines has under way research and development work in both the principal processes. Extensive work is being carried on by most of the leading oil companies and other industrial firms, particularly on the gas synthesis process.

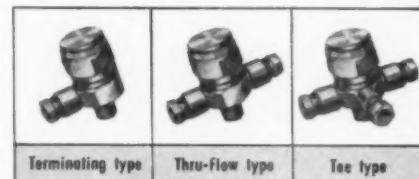
All synthesis gas produced commercially from coal in this country has been obtained to date by gasifying byproduct coke. Since coking coals are relatively scarce, one of the major problems for which a solution is sought is to find a means of directly gasifying coal rather than first coking it and then gasifying the coke.

This problem is being attacked by the Bureau of Mines in laboratories, and pilot plants at Morgantown, W. Va.; Pittsburgh, Pa.; Louisiana, Mo.; Grand Forks, North Dakota; and Gorgas, Alabama. Battelle Memorial Institute and the Anthracite Institute Laboratories also are working on this problem.



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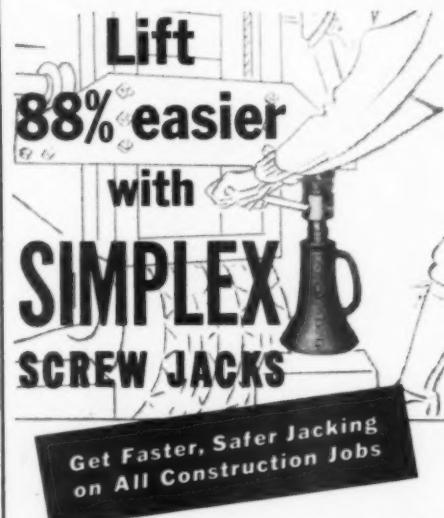


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These Screw Jacks employ a single chrome-moly ball nested under the drop forged steel cap that actually reduces friction 88%! Ball won't flatten; cap can't slip. Flared base for stability; safety peephole prevents over-extension. 21 models with 4-Way Head, 10-24-ton cap. 10 models with Ratchet Type Head, 20 or 24 ton cap.





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*That is why* General's Technical Servicemen so frequently offer suggestions and ideas that point the way to new efficiencies and economies in production and research operations.

Remember—General's Technical Service staff is yours to utilize. Just advise the nearest General Chemical office when you need such assistance.



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3. MORE COOLING FOR YOUR MONEY. Large water reservoir and reliable, long-life G-E refrigerating machine.
4. LONG-LASTING ATTRACTIVE CABINET. Heavy gauge steel treated for resistance to corrosion and finished in rich metallic bronze lacquer.



# GENERAL ELECTRIC



## Water Coolers

### AIR REDUCTION ANNOUNCES REVOLUTIONARY WELDING PROCESS

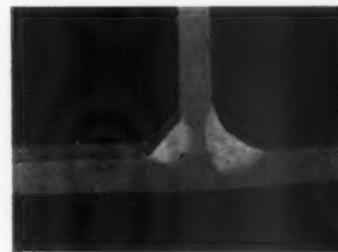
A revolutionary new welding process, styled the Aircomatic process, was introduced to industry at the National Metal Show in Philadelphia, by Air Reduction Sales Company. The process may be used for welding heavy sections of aluminum and aluminum alloys at wire feed speeds ranging from 100 to 300 inches per minute, permitting deposition rates far exceeding those attached by usual welding methods.



Welding of aluminum may be performed in all positions

A gas-shielded, metal arc method of welding, the new process consists of feeding consumable wire through a manually operated welding "gun." The metals being welded are shielded from the air by an inert gas. Automatic equipment employing the same principles is under development, as is the application of the process to metals other than aluminum and aluminum alloys.

The consumable wire, which replaces the conventional non-consumable tungsten electrode, carries welding current and an arc is maintained between the end of the wire and the work. Power is supplied from a standard d.c. welding generator.



Fillet welds on 3/16" 61 ST aluminum plate. The weld on the left was made in a horizontal position at welding speed of 34 inches per minute. Weld on right was made in flat position at speed of 30 inches per minute.

Welding of aluminum may be performed in all positions, namely flat, horizontal, vertical and overhead. All of the standard joint designs may be welded in these positions. The company lists the following advantages of the process:

1. Manual welding process with the essential features of automatic welding.
2. Continuous deposition of filler metal at high rates.
3. Manual manipulation of an automatic process for welding in a vertical and overhead position.
4. High quality weld deposits.

(Please turn to page 230)

# ~~12~~ REASONS

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—An amazing combination  
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and stainless steel bolts, nuts, screws,  
washers, rivets and accessories.



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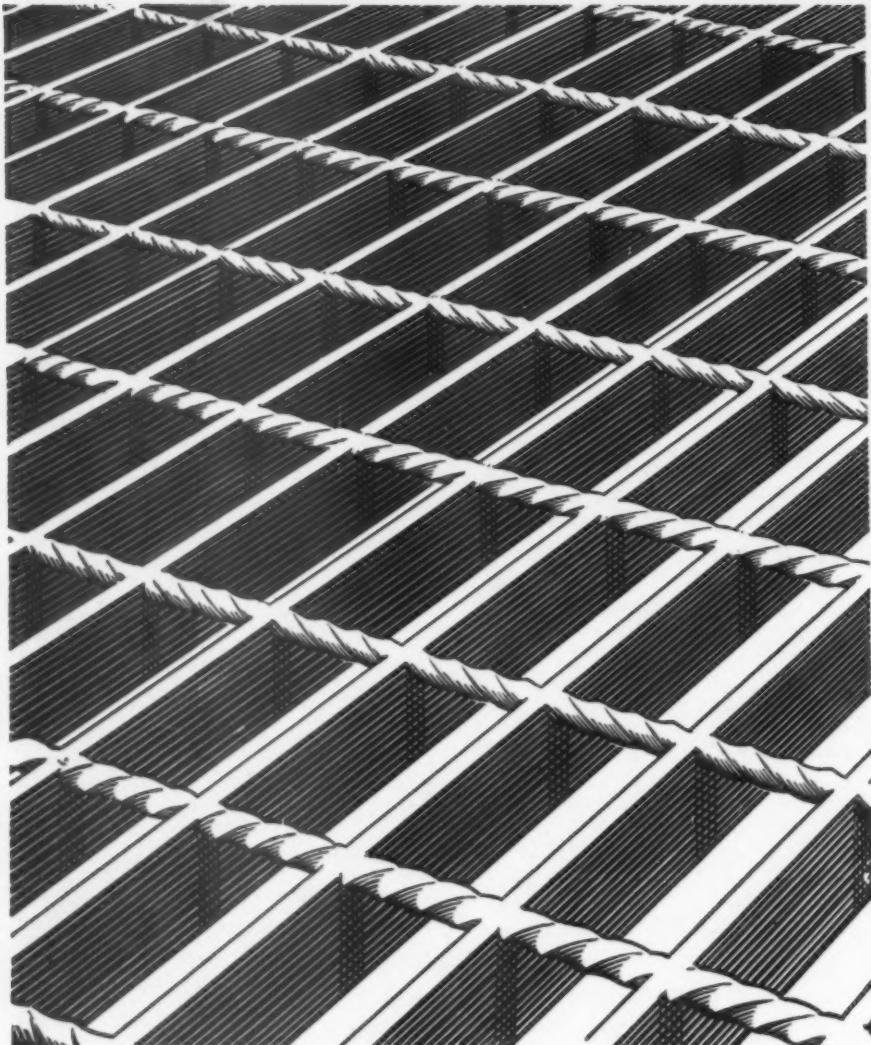
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They're electroforged directly *into* the bearing bars to form a rigid one-piece steel "material" of guaranteed strength—with safe footing at all times . . . Blaw-Knox Grating also—

- ★ Provides Maximum Open Area for light and ventilation
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OF BLAW-KNOX COMPANY  
2075 FARMERS BANK BLDG., PITTSBURGH 22, PA.**

# BLAW-KNOX ELECTROFORGED STEEL GRATING

- (Continued from page 204)
5. Minimum edge preparation owing to deep penetration.
  6. Ability to weld heavy sections with little or no preheat.
  7. No flux required; slag removal eliminated.
  8. Visible arc; no blind welding.

### NEW GERMICIDE ANNOUNCED BY MONSANTO

A powerful germicide, free of so-called "hospital odor", was announced recently by Monsanto Chemical Company, St. Louis, Mo. The chemical, a substituted phenol, is now available for the first time in commercial quantities.

The germicide is being sold under Monsanto's trade name Santophen 1. It is effective against both fungi and bacteria and is non-irritating in usage dilutions, according to technical data released by the company. "Standard skin patch tests conducted by independent laboratories", said L. W. Sessions, in charge of the product's sales development, "have shown that individuals may be exposed safely to Santophen 1 properly formulated and diluted to normal use strength."

Although the germicide shows phenol coefficients in the order of 150 to 200 against standard test organisms, and kills fungi in concentrations of .005% to .05% tests have shown that it is relatively non-toxic to higher animals.

A dry, non-dusting, flaked solid, Santophen 1 germicide is not a mixture of isomers, and thus its properties are dependable and predictable, Sessions said. He also pointed out that it can be formulated readily with commercial dispersing agents to give aqueous concentration with high phenol coefficients. It is a nearly colorless compound, he added, and does not stain or discolor surfaces.

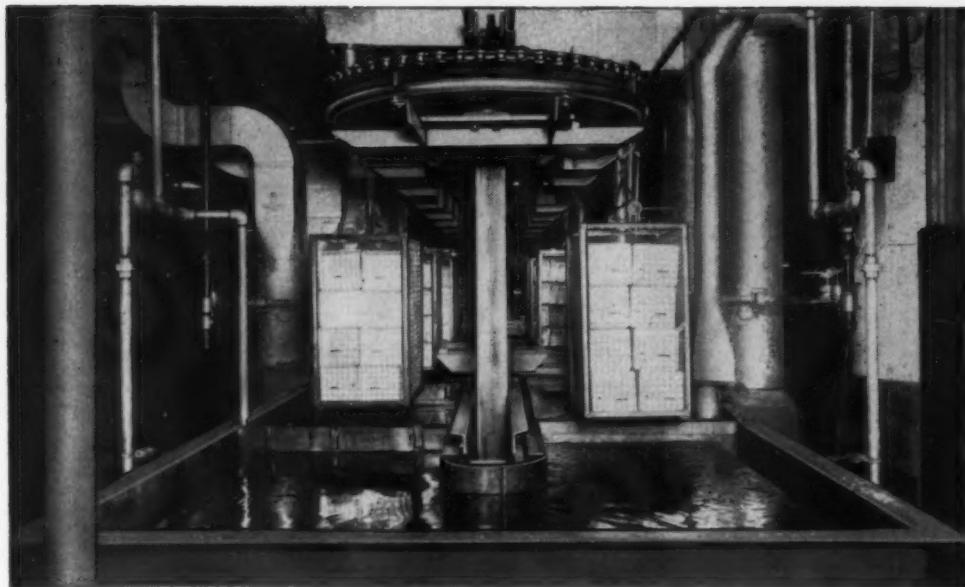
### ELECTRONIC CURING IN USE BY B. F. GOODRICH

Electronic vulcanization of rubber, carried on for several years on an experimental basis, has been adopted as standard production procedure by The B. F. Goodrich Company, Akron, Ohio, for certain types of extruded products.

Such articles as tubing, strip and channel stock and rubber thread are being given the super-quick electronic cure, T. G. Graham, vice-president, said. He added that products now being given this handling have an aggregate industry-wide sales volume of \$45 million annually.

The electronic curing eliminates considerable product handling during manufacture, materially speeds the process by making it possible to run in a continuous line from the extruder, and gives product quality advantages, B. F. Goodrich engineers said. In the process, they explained electronic energy waves traveling at up to 186,000 miles a second create internal friction by agitating molecules in the rubber, instantaneously generating a temperature of about 300 degrees. In some products the actual curing time is reduced from an hour and a half to two minutes.

(Please turn to page 210)



## How would YOU have solved this metal-finishing problem?



**The Story:** Because of shortages of steel, Minneapolis-Honeywell decided to use aluminum for its regulator covers. But this change introduced a knotty problem . . .

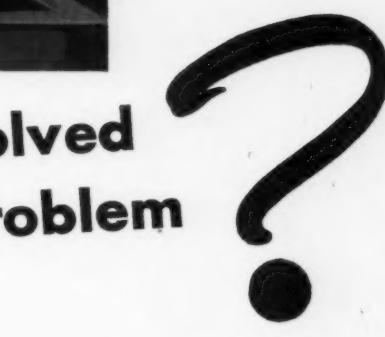
### The Problem:

Since aluminum does not bond paint to itself firmly, a process had to be worked out by M-H engineers to inactivate the metal's surface and permit an adherent paint-to-metal bond. This process involves several cleaning, rinsing and chemical-bath operations before painting can be done. *How to turn out regulator covers in mass production—involved this multiple-stage process?*—that was the problem.

### The Solution:

"Why not adapt a Udylite Fully Automatic Plater?" the researchers asked. "This isn't an electrolytic process, to be sure, but it does involve certain chemical-bath operations which must proceed continuously and be timed accurately." So they did. With these results:

1. *The Udylite plater's fully automatic mechanism provided the continuous production-line processing needed.*
2. *The Udylite machine's hydraulically-actuated immersion mechanism made it possible to adjust the speed of immersion and withdrawal of the work individually and accurately to the requirements of the individual run.*
3. *Straight-up-and-down raising and lowering of the work saved 18" to 24" of tank per transfer, prevented "floating off," and assured adequate drainage of solution from work parts.*
4. *MASS-PRODUCTION WAS ACHIEVED; THE MACHINE TURNS OUT 25,000 REGULATORS PER HOUR.*



Is yours a problem involving  
automatic plating? better  
finishing? more output?

If so, call in the Udylite Technical Man, describe your problem and the results you want, and let him make recommendations. Udylite produces a complete line of plating and metal-finishing equipment—barrel platers, rectoplaters, Fully Automatics, Semi-Automatics, etc.—and laboratory-tested supplies. Our metal-finishing specialists will plan the most efficient process for your operations—without obligation. Call or write us today.

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PIONEER OF A BETTER WAY IN PLATING  
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# How the proper application



# of wire rope -may save you money

● Every user wants to get the best possible service out of his wire rope but it is amazing how often simple rules are broken in the field. Some operators are careless when installing a new rope . . . they keep machines running when sheaves are badly worn . . . they overload the rope . . . they forget to lubricate the rope.

To help eliminate these human failings, the American Steel & Wire Company maintains a staff of TIGER BRAND Wire Rope Specialists. These men are experienced field service engineers. If you have not checked your equipment recently, for correct wire rope application, call in the TIGER BRAND Specialist. He'll do the job for you without charge. Here are some of the points he checks before recommending the proper wire rope for your job—

1. Method of installing and caring for rope.
2. Diameter of sheaves and drums, and condition of grooves.
3. Arrangement of sheaves.
4. Fleet angles.
5. Loads handled.
6. Rope speeds, acceleration and deceleration.
7. Presence of vibration, whipping.
8. Lubrication.
9. Corrosion.
10. Amount of scrubbing and abrasion.
11. Fitting attachments.
12. Abuses to be corrected.
13. Analysis of service records.
14. Finally: Recommendation of the correct rope to meet all conditions.

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- No. 2 — Ideal for general oil type lubrication, ring oiled bearings, wick feeds, sight feeds and bottle oilers.
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### NEW ESTIMATE OF U. S. COAL RESERVES UNDER WAY

A completely new and detailed estimate of the coal reserves of the United States is being made by the U. S. Geological Survey, Department of the Interior, Paul Averitt of that agency disclosed in an address at the 11th National Fuels Conference of The American Society of Mechanical Engineers and the American Institute of Mining and Metallurgical Engineers. Pointing out the need for such a survey of the nation's coal resources, Mr. Averitt said it will require about 10 years for completion of the project, though much specific information will be available meanwhile.

"The coal fields of the United States are large in all dimensions," said the speaker. "They cover roughly 350,000 square miles, or approximately one-ninth of the total area of the United States. The coal-bearing rocks commonly are several thousand feet thick, and, as in West Virginia, contain as many as 117 named and correlated coal beds. An estimate of the coal reserves in this great volume of rock is an expensive and time-consuming job."

Currently used figures on U. S. coal reserves were last revised in 1928, and only minor changes have been made since, Mr. Averitt pointed out. Though substantial revision of these figures was deemed necessary, lack of funds in the years following precluded the work, he said. However much new data were amassed, particularly on the Montana coal fields, and therefore a reappraisal of reserves in that state began the national program of the Geological Survey. This is now nearing completion.

1 1 1

### ADVANCES IN MANAGEMENT OF MARKETING, SALES, PACKAGING

The American Management Association has published a checklist of publications, "New Directions in Sales Management, Marketing and Packaging", reporting advances in sales management, marketing and packaging during recent years.

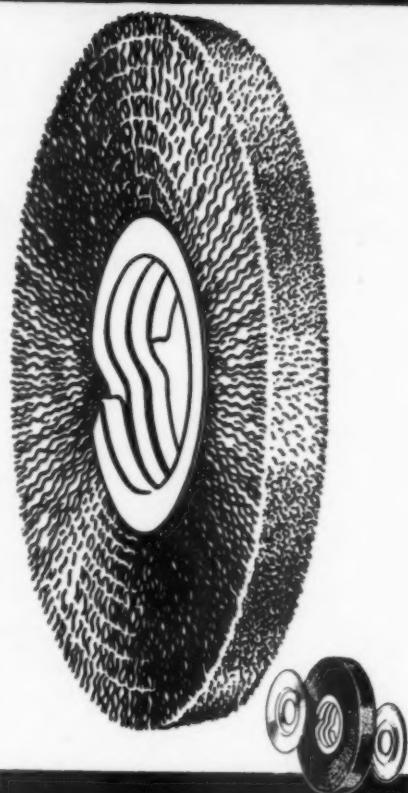
In the 59 pamphlets, booklets, and research studies listed are expositions and analyses of operating techniques, policy determination, procedures, company case histories and the technical experience of leading organizations which have pioneered progress in market research, sales compensation, materials handling and container and package testing, sales training and other aspects of distribution.

Fifteen of the publications cover marketing, 17 are devoted to packaging, and 5 discuss personnel management. Also listed are production general management, office management, personnel management and research reports and special publications pertinent to the development of marketing, sales and packaging management.

In pamphlet form the checklist is available without cost from the Association, 330 West 42nd Street, New York 18, N.Y.

Please turn to page 212

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Economical Replacement



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Fullerdiscs are adapted to fit shafts from  $\frac{1}{2}$ " to 1". Brush diameters range from 5" to 9" in a choice of materials. For complete specifications send for new folder "Fullerdisc Wheel Brushes". Write today to ...



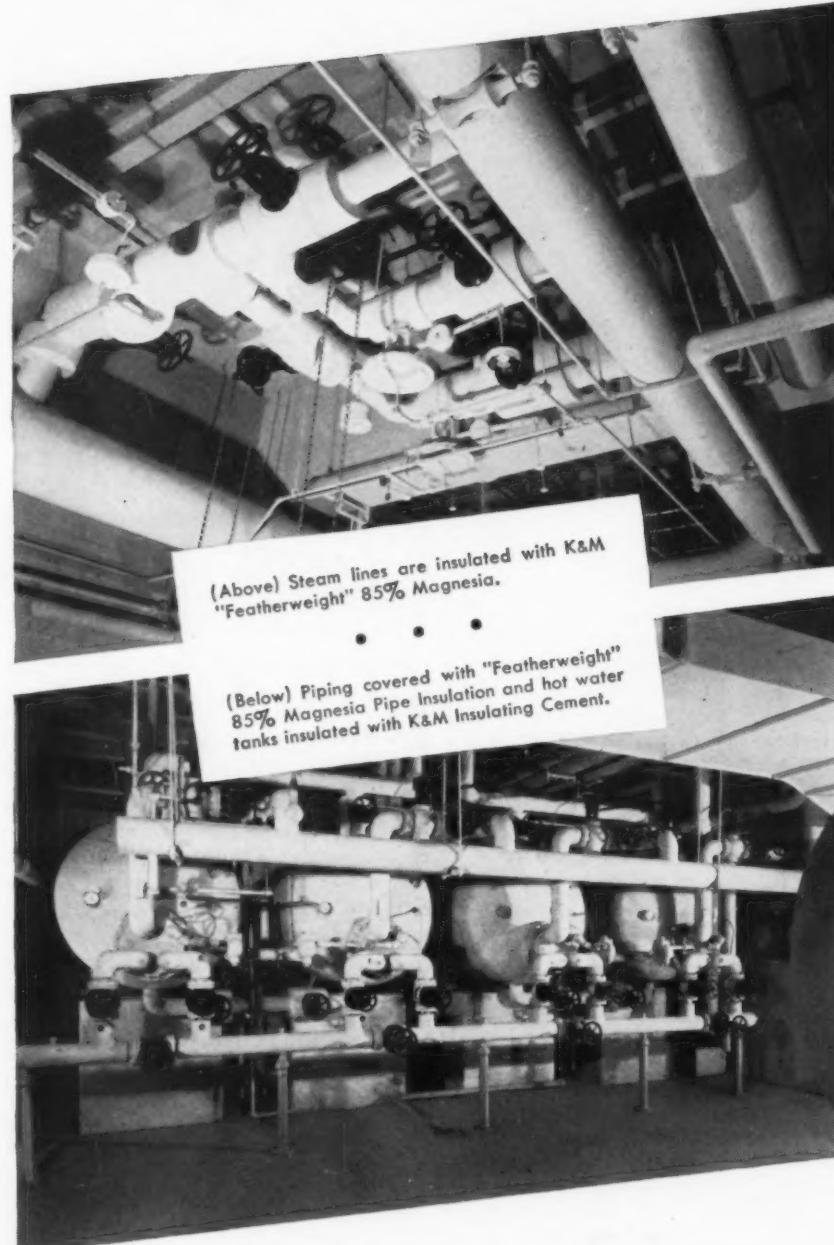
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### PURCHASING DEPARTMENT REPORT REFLECTS INCREASED GOVERNMENTAL COSTS

The annual report of Roland M. Brennan, Purchasing and Contracting Officer, District of Columbia, Washington, D. C., for the fiscal year ended June 30, 1948, amounted to approximately \$9,000,000. This exceeds total purchasing during the preceding year by approximately \$1,700,000, and the year before by over \$2,500,000. Mr. Brennan reported that the increase in valuation of purchasing in 1948 as compared with 1947 cannot be attributed solely to increased prices, as a considerably greater volume of goods was purchased for the various departments of the District, such as major items of equipment not heretofore procurable since the end of the War.

By taking advantage of discounts offered by vendors during the year, the District realized \$28,858.07, an increase of \$5,284.31 over the previous year.

Forty percent of all 1948 purchases was spent for food, fuel, motor vehicles, tire and tubes and motor vehicle accessories and parts, continued the report. "A great improvement in competition occurred as compared with the previous fiscal year. Many new firms have been added to our qualified lists of prospective bidders and numerous requests of manufacturers and dealers from practically every state in the Union are being received for "Invitations to Bid" on District requirements.

"A Buyers' market in many commodities is back. In some cases we receive as many as 20 to 25 bids on each opening of bids," says the report. During the year the Department purchased 102 passenger-carrying motor vehicles, 16 motorcycles for the police department, 1 motor bus, 1 ambulance, 1 aerial ladder and one pumper, 138 trucks (light, medium, heavy) for various agencies, 1 10-ton crane, mobile crushing and pulverizing plant, six loaders and 1 crawler track crane.

Mr. Brennan reported that the ability to obtain competition on steel is further complicated by the elimination of the basing point system, though the District is in a somewhat advantageous position so far as purchases of steel are concerned, due to the fact that one of the largest steel companies in the United States is located close by, offering the advantage of lower freight rates.

#### Escalation vs. Firm Price

"It has long been the policy of the Purchasing Officer to resist escalated bids from bidders or to insist on establishing a ceiling on the percentage of any increase likely to occur between the date of the purchase order and the date of delivery of materials or equipment in question or, as an alternative, to include in the purchase order a statement to the effect that the District of Columbia will pay no more at the time of delivery than the prices charged by the vendor to other buyers of comparable equipment or supplies. Likewise, all escalator clauses in supply contracts are geared in two directions, so the District can derive the benefit of any reduction in prices, if any, at the time of

(Please turn to page 214)



instead of  
**SLIPPERY FLOORS**



when you SPRINKLE

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OIL AND GREASE ABSORBENT*

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SOLUBLE OIL ABSORBENT*

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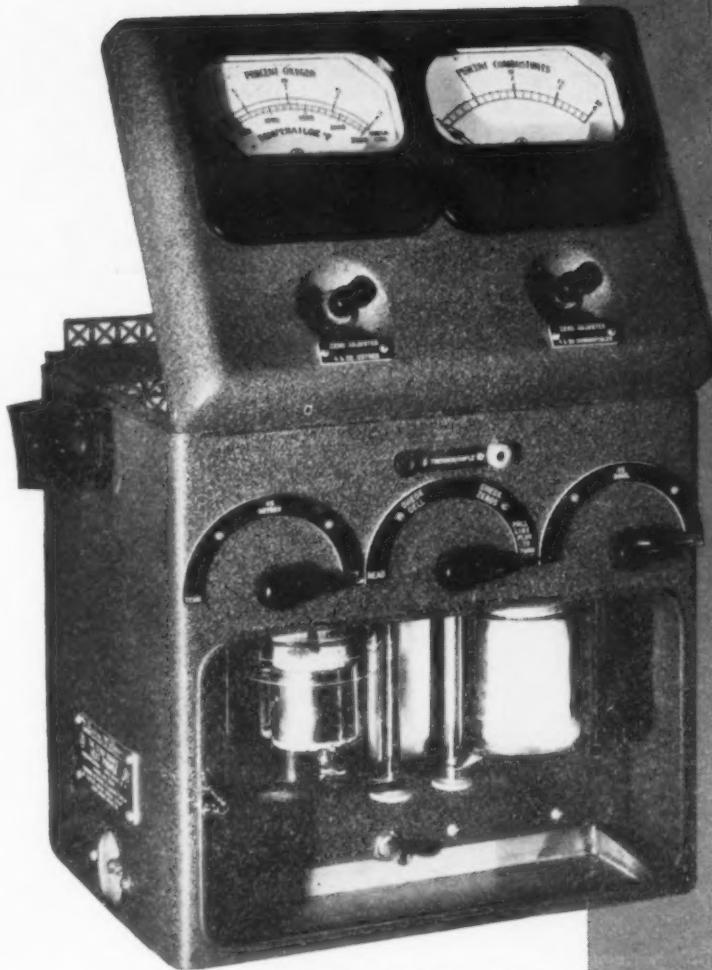


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Prove the oil and grease drying action of QUIK-SIL and the water and soluble oil-drying action of AQUA-LIC — by actual test. With either or both products you'll note that floor surfaces are easier to clean. Write Today!

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REYNOLDS ALUMINUM, THORN STEEL WINDOWS

(Continued from page 212)  
delivery. As competition improves, escalated bids should diminish.

**Policies**

"All recommendations of policy submitted by the Purchasing Officer to the Commissioners during the year were approved. Of particular interest was a decision of the Comptroller General of the United States of December 5, 1946, that procurement by the District of Columbia of supplies and equipment, other than materials for construction or street improvement work by contractors, is not required to be supported by a performance bond even though the contract is for more than \$1,000. This decision has revolutionized District of Columbia purchase contract procedure, has improved competition and has reduced considerably not only the administrative cost of handling purchase contracts by the Purchasing Division and other District agencies concerned, but has also made District business more attractive to vendors."

Purchasing Officer Brennan is the contracting officer for the District Purchasing division, and awards all open market and negotiated contracts for the purchase of supplies, materials and equipment for the District of Columbia.

† † †  
**COMMERCIAL STANDARD, ENAMELED  
C-I PLUMBING FIXTURES**

Commercial Standard CS77-48, Enamelled Cast-Iron Plumbing Fixtures, superseding CS77-40, is now available from the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C., at 10¢ per copy.

† † †  
**CARBORUNDUM ANNOUNCES  
ELECTRIC FIRING OF  
VITRIFIED GRINDING WHEELS**

The electric firing of grinding wheels has been brought to the level of large scale production by the Carborundum Company, Niagara Falls, N. Y., through the development of a new type of kiln which embodies new and more accurate zone firing methods for scientific control of the ring cycle, a critical point in the manufacture of the wheels.

One of the outstanding developments in grinding wheel production, brought about by long experimentation, the new method reduces firing cycle time to one-third, and as little as one-twelfth of that normally required in conventional methods, using standard kiln equipment. The manufacturing line can now be organized so that mixing, molding, drying, firing, finishing, packing and shipping operations will follow in efficient sequence. Among the advantages to grinding wheel users resulting from the new development are more exacting quality, improved bonds, and duplication of wheel quality controlled to an exact degree.

Known as the Globar Tunnel Kiln, the kiln was developed by the Abrasive Division and Globar Division of the Carborundum Company, at Niagara Falls, and the Refractories Division at Perth Amboy, N. J.

## PONDEROSA PINE DOORS COMMERCIAL STANDARD

Commercial Standard 120-48, effective November 20, 1948, standard stock ponderosa pine doors, was recently announced by the Commodity Standards Division, National Bureau of Standards, Washington, D. C.

### FIBERGLAS, SYNTHETIC RUBBER COATED APRONS

Cloth woven of Fiberglas yarns and coated with a synthetic rubber is used by the Fisher Scientific Co., Pittsburgh, Pa., for aprons designed to provide laboratory workers with maximum protection. The apron is wide enough to protect the



The protective apron is made of Fiberglas yarns coated with synthetic rubber

sides of the wearer from lateral splashing. It is designed to come within four inches of the average wearer's neck and to hang about six inches above the floor. Possessing high tear strength the fabric is resistant to burning and to all common laboratory reagents.

### PROTECTIVE PLASTIC COATING SUPPLIED IN HANDY SPRAYER

Krylon is the name of a transparent plastic coating, made by Foster & Kester Co., Inc., Philadelphia 32, Pa., that is supplied in a self-contained handy compact sprayer. By pressing the button top of the can with the index figure, a fine spray of durable, colorless plastic material is forced out under pressure to provide a clear, protective coating that will adhere to practically any product.

The coating itself dries in less than a minute, leaving a clear finish that retains the flexibility of the material on which it has been applied. This coating has resistance to discoloration at high temperatures, water, alcohol, alkali, acids, mineral oils, grease, and chemical fumes.

Among many uses, it can be applied to products as a protective coating until they get to market. Metallic items such as saws, tools, etc., are said to retain their original lustre when covered with it. The coating may be removed with a solvent made by the manufacturer.

*White*  
*Levinson*  
FOR FABRICATED STRUCTURAL STEEL

2-R

**LEVINSON  
STEEL COMPANY  
PITTSBURGH, PA.**

ALL TYPES OF STRUCTURAL AND  
MISCELLANEOUS STEEL FABRICATION



by **BASSICK-SACK**

**FINISHING BY**

**LEA LEA  
COMPOUNDS**

**METHODS**

Here's what the Bassick-Sack Division of the Bassick Co. has to say about LEA:

"We are using the LEA Method and LEA Materials almost exclusively in the finishing of our furniture hardware, and are finding them most satisfactory. We have every expectation of continuing to use them for cut-down and coloring operation on plated parts, solid cast-brass and stamped. We intend shortly to use them on die cast parts finished in either chrome plate or brass plate."

That's versatility: LEA Methods and LEA Compounds doing several jobs (including cut-down and coloring) on a variety of articles (plated, stamped, sand-cast and eventually, die-cast). This wide range of applications may give you some conception of how LEA will fit into your production line. If you are burring, polishing or buffing metals, plastics or woods, LEA, with more than twenty years' experience in the finishing field, may be able to assist you in cutting costs and improving the quality of your finishing.



**THE LEA MANUFACTURING CO.**

*Burring, Buffing and Polishing . . . Manufacturers and Specialists in the Development of Production Methods, Equipment and Compositions*

16 CHERRY AVENUE      WATERBURY 86, CONNECTICUT

#### **MOTOR AND GENERATOR BRUSH STANDARDIZATION BOOKLET**

National Carbon Company, Inc., is offering a booklet on Standardization of Carbon, Graphite and Metal-Graphite and Metal-Graphite Brushes for Motors and Generators, which outlines a simple method of saving time and money for all users of motors and generators by illustrating how standardization can be accomplished.

Conversion from a great number of custom-built, individually ordered brushes with random specifications to a smaller number having predetermined and unified specifications will make it possible to order brushes by National Carbon Company's simplified RC Number system.

Brush standardization has saved individual companies hundreds of dollars by reducing the number of small orders and by purchasing in more economical quantities. It also effects a reduction in the number of stock items with savings in space and in handling time, less money tied up in brush stocks, and money saved on ordering, stock records and accounting.

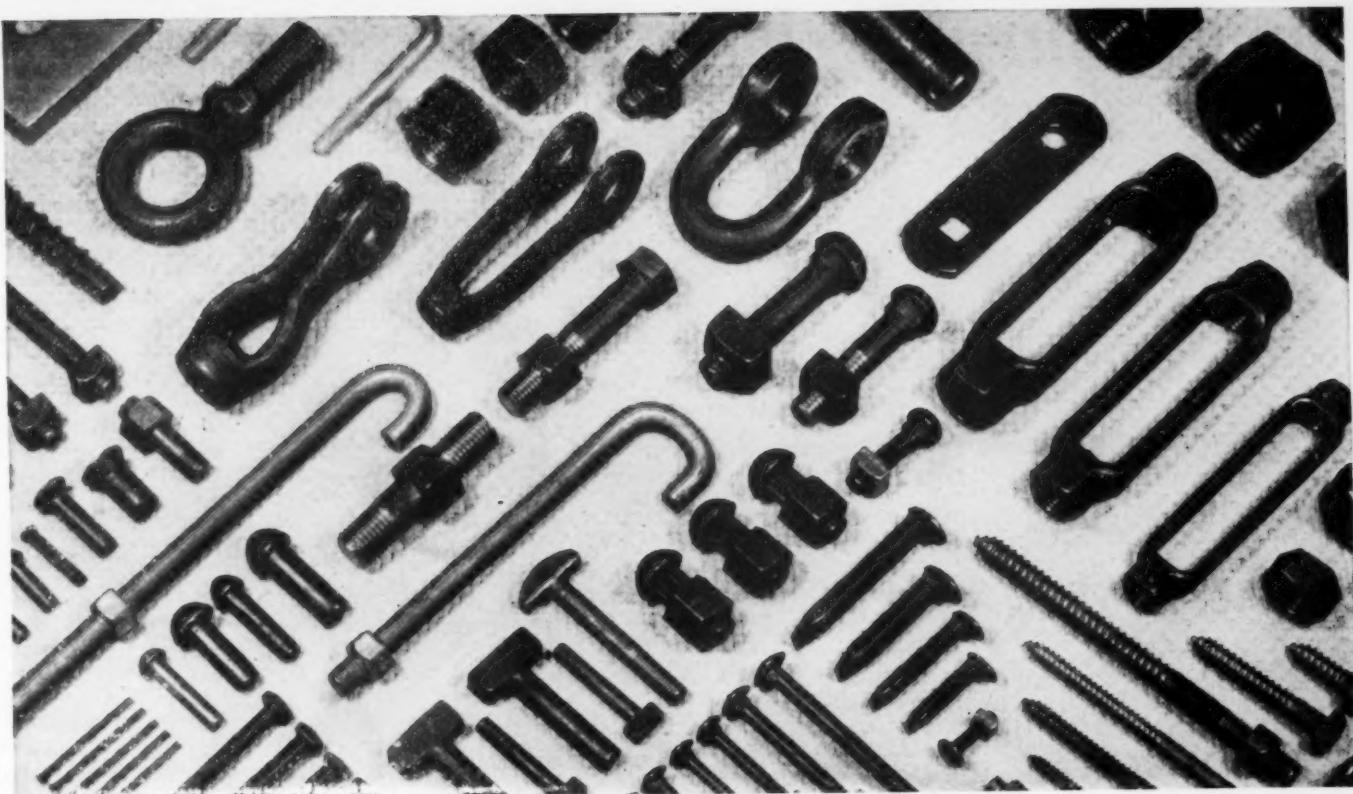
A copy of *Catalog Section B-2106* may be obtained by writing National Carbon Company, Inc., Room 1328, 30 East 42nd Street, New York 17, New York.

#### **AMERICAN-BRITISH-CANADIAN STANDARDS FOR SCREW THREADS**

A joint conference of representatives of Government committee and ranking industrial standardization groups from Great Britain, Canada, and the United States are scheduled to meet within the next three months to finalize agreements on common standards for screw threads used on most types of threaded fasteners, including bolts and nuts. The attainment of such standards is important to commerce and industry.

It is planned to hold this conference at the National Bureau of Standards, which has actively cooperated in the attainment of this objective over a period of many years. These agreements will not be in the form of a treaty, but will be based on separate documents, each of which is sponsored by the standardization group or groups of each of the countries concerned. These documents, setting forth the Unified Screw Thread Standard, will be in agreement on all fundamental points relating to the standard, but may differ in minor details and will differ in arrangement and general make-up. The purposes of the joint conference are to assure that there is complete agreement on all fundamentals and to celebrate the attainment of such agreement after many years of negotiations.

**IDLE SURPLUS IS IDLE CAPITAL! CONVERT IT TO CASH . . . LIST YOUR COMPANY'S SURPLUS IN PURCHASING'S CLASSIFIED SECTION NEXT MONTH SEE PAGE 310**



# JUST ABOUT *Everything* IN FASTENINGS

No matter what types or sizes of fastenings you may require—no matter what the quantity—you can count on Bethlehem meeting your needs.

Bethlehem is particularly well equipped to turn out the great variety of fastenings demanded by industry because of the complete facilities and versatility of our highly-specialized fastenings plant at Lebanon, Pa.

Not only do we make standard items like machine, carriage, and lag bolts. We also manufacture turn-buckles and clevises, tie-rods, rivets and rivet-bolts,

## BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by  
Bethlehem Pacific Coast Steel Corporation  
Export Distributor: Bethlehem Steel Export Corporation

# BETHLEHEM STEEL



DECEMBER, 1948

spikes, nuts, and many others—including a wide range of specialty items.

Next time you need fastenings, talk it over with a Bethlehem representative, or contact the nearest Bethlehem sales office.



### SPECIAL BOLTS USED IN BROOKLYN-BATTERY TUNNEL

In constructing the 2-mile Brooklyn-Battery Tunnel, built by the Triborough Bridge and Tunnel Authority, special bolts were needed for fastening together the cast-steel tunnel segments. Bethlehem's Lebanon plant went to work and, using high-tensile steel, supplied nearly 900,000 of these hexagon-head, heat-treated bolts in two sizes: 1 1/4 in. x 8 1/4 in., and 1 1/8 in. x 5 1/2 in.

Supplying the bolts for this spectacular job is an example of Bethlehem's ability to meet the highly-specialized fastenings needs of industry.

# Speed Burrin' Jobs with OILSTONE FILES



## Grinding Wheel Grit ... and ALL File!



Whether it be the skillful stoning of the countless teeth in these giant reduction gears or single-stroke passes on thousands of small machined parts—burring is a production operation.

India Oilstone files, by Norton Abrasives, speed burring jobs—with a corresponding cut in production cost—for two reasons. They are made of aluminum oxide, grinding wheel abrasive, and they're all file—not just rows of cut teeth. They cut hardened steels as well as untreated, and permit easier control of stock removal.

Factory oil-filled for greater chip clearance, India Oilstone files offer Industry a complete size and shape range of over a hundred standard stock items with a finish spread including coarse, medium and fine grits. Ask your distributor or write for booklet, "Oilstone Files."

Photo courtesy of Westinghouse Electric Corp.



**BEHR-MANNING • TROY, N.Y.**

**ALSO QUALITY COATED ABRASIVES SINCE 1872**

### STANDARD SAMPLES FOR RUBBER COMPOUNDING

As an outgrowth of the successful use of standard samples of rubber-compounding ingredients in the Government synthetic rubber program, the National Bureau of Standards has added seven of these standards to the long list of Standard Samples supplied to industrial and scientific laboratories. The requirements of the specifications for Government synthetic rubbers are now predicated on the use of these Standard Samples for stress-strain testing of synthetic rubbers. The samples are also available to manufacturers of rubber products for use in connection with the procurement of raw materials, process control, and inspection of product quality.

The use of Standard Samples of compounding ingredients for the testing of rubber was inaugurated in 1943 by the Committee on Specifications for Synthetic Rubbers, under the sponsorship of the Office of Rubber Director and Rubber Reserve Company, now the Office of Rubber Reserve. This was a vital part of the Government synthetic rubber program, which resulted in outstanding improvements in precision and accuracy of testing in the Government synthetic rubber plants. The uniformity of synthetic rubber production in recent years has been made possible by the improvements in testing rubber.

Orders for these materials should be sent to the National Bureau of Standards, Washington 25, D. C., accompanied by payment in advance. Remittances should be payable to the National Bureau of Standards. Shipments will be made express collect unless otherwise specified. The following Standard Samples are available in air-tight metal containers except No. 376 which is packaged in glass. When ordering, specify both number and name of sample.

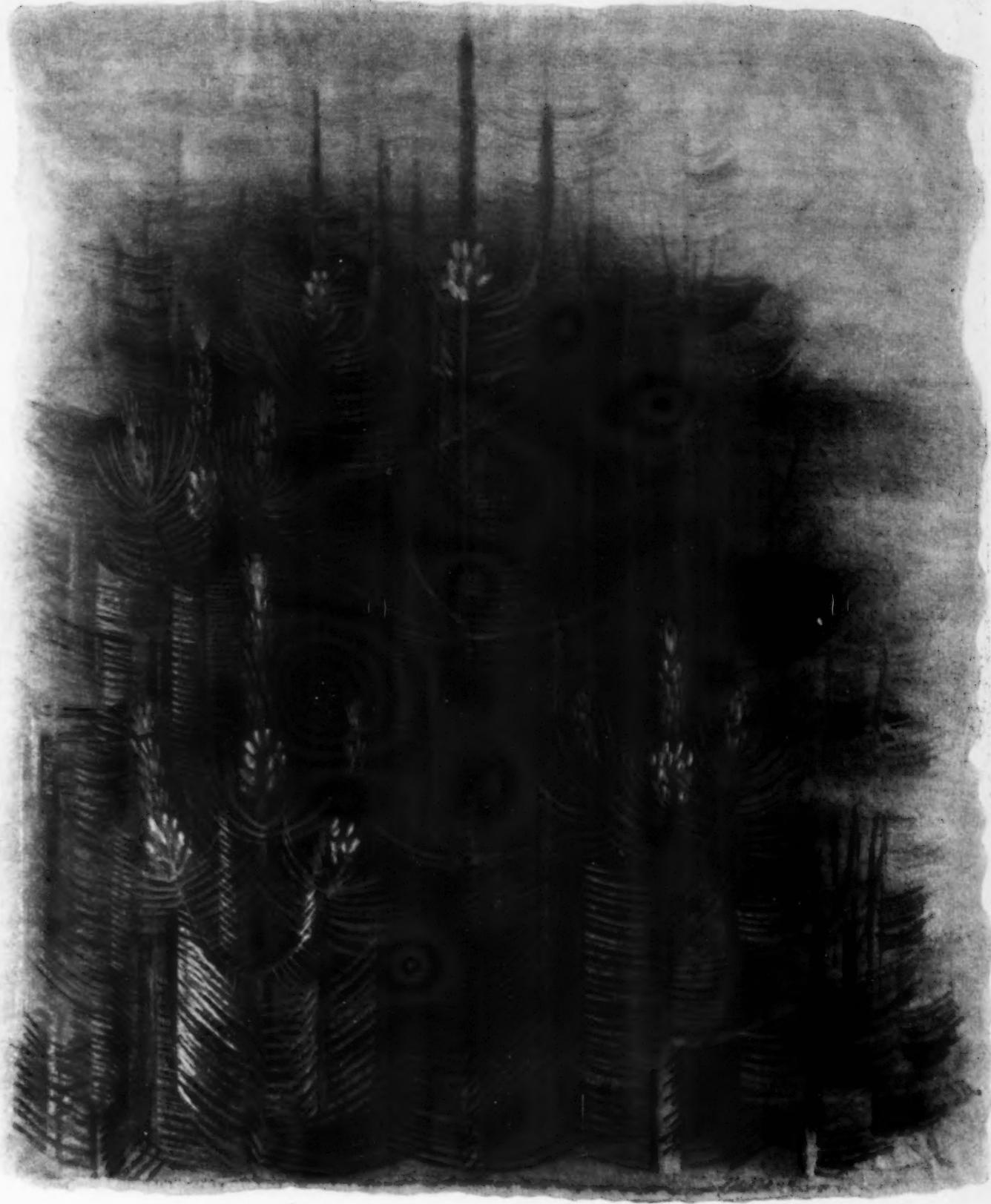
Standard Sample	Weight per Pkg. grams	Pkgs. Per Carton	Price per Package
370 Zinc Oxide	2000	8	\$1.65
371 Sulfur	1000	20	0.60
372 Stearic acid	600	1	1.20
373 Benzothiazyl disulfide	600	40	1.20
374 Tetramethyl-thiuram disulfide	600	1	2.25
375 Channel black	8000	4	3.50
376 Light magnesia	140	1	0.85



### "NEW 1949 POSTAL RATE CHART"

A new 1949 Increased Postal Rate Chart has been prepared by Commercial Controls Corporation, manufacturers of complete mailroom equipment. The Chart shows rates on all classes of mail and postal services, including the increased rates effective January 1, 1949, and the newly inaugurated Air Parcel Post rates, which became effective September 1, 1948. Convenient to use and clearly legible, the Chart is 15" x 21", printed in two colors on card stock, suitable as a mailroom wall chart.

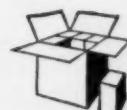
They are available by writing to Commercial Controls Corporation, 640 Culver Road, Rochester 2, N. Y., and enclosing 25¢ in coin to cover handling costs.

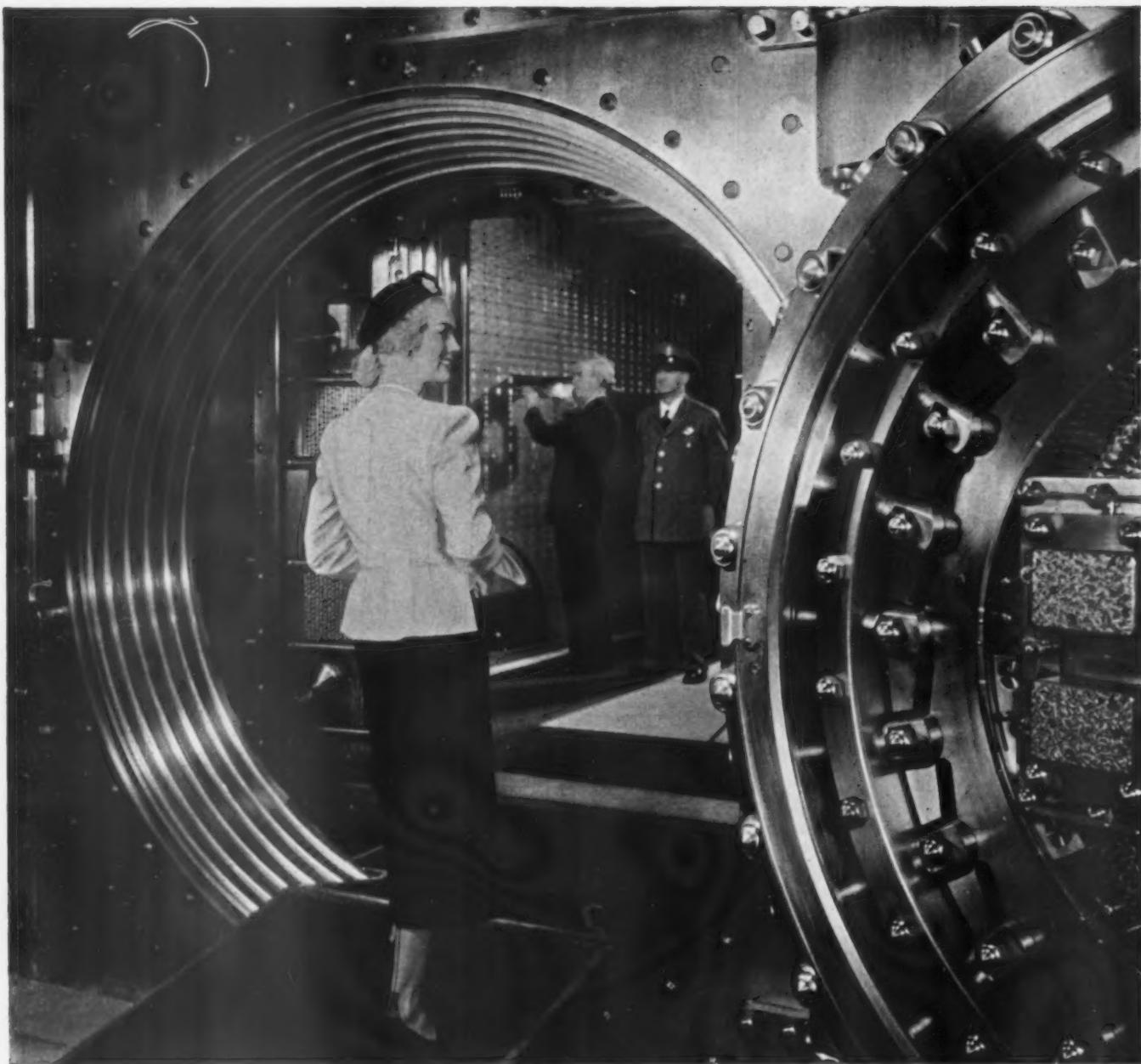


Artist — Morris Graves, native of Oregon

OREGON—annual purchases: \$1½ billion—mostly packaged.

CONTAINER CORPORATION OF AMERICA





*Banking, for many, is symbolized by scenes like this, pictured at one of Bank of America's San Francisco branches.*

## **Banking? Here, too, Moore cuts costs**

Do soaring costs menace profits? Your business can trim those costs. And Moore can help.

Bank of America, with branches throughout California, saves thousands of clerical man-hours a year by using Moore multi-copy forms. Small firms save, too, because Moore offers *the right business form for every form of business*. For example: a poultry farm in New Hampshire was using 4 separate forms and 4 separate writings to

prepare Orders, Acknowledgments, Shipping Memos, Invoices. Moore designed a 4-part continuous register form that completes the whole job *in one swift writing*.

Cut your overhead, now! Call your Moore office, in over 200 cities, coast to coast. Factories in Niagara Falls and Elmira, N.Y.; Minneapolis, Minn.; Denton, Tex.; Los Angeles and Emeryville, Calif. Also sales offices and factories across Canada.

**MOORE**   
**BUSINESS FORMS**  
**INC.**

THE ONLY NATIONAL COMPANY THAT OFFERS A COMPLETE RANGE OF MODERN BUSINESS FORMS—

THE RIGHT BUSINESS FORM  
FOR EVERY FORM OF BUSINESS!



# **PRODUCTION EXECUTIVE**

**SECTION  
IVE**  
**Office Equipment and Supplies**

## *Monthly*

# FORMS FORUM

**Stores Record of Purchases, Stores Record of Materials Issued  
from Stock, Requisition, and Purchase Order forms,  
Furnished for Forum use by Purchasing Agent  
K. A. Koepcke of the Madison Gas &  
Electric Co., Madison, Wis.**

**Stores Record—(Purchases)**—Records of all purchases of material, i.e., as indicated on the card, are maintained on this card.

**Stores Record—(Materials Issued from Stock)**—This card indicates the quantity and dollar amount of material on hand at the end of each month. Each individual transaction is recorded thereon. This card and the one above are filed opposite each other in a Kardex file. This permits instant reference to purchases, issues and balances of any item at any time. This system obviates need for separate stock balance book. Periodically the cards are removed and bound, and are readily available for reference. (Forms Forum continued on page 222)

(Forms Forum continued from page 221)

MADISON GAS AND ELECTRIC COMPANY		NO. _____
PURCHASING AGENT	_____ 104	
CHARGE TO ACCOUNT NO.	PLEASE ISSUE ORDER FOR THE FOLLOWING FOR DELIVERY TO _____	
	CHARGING SAME TO ACCOUNTS INDICATED IN MARGIN OPP. EACH ITEM:	
Actual Size 5 x 7 <sup>1</sup> / <sub>2</sub> "		
REQUISITIONS FOR PURCHASES MUST NOT BE MADE UNLESS IT HAS BEEN DETERMINED THAT THE SUPPLIES WANTED ARE NOT IN STOCK. THIS REQUISITION MUST BE SIGNED BY THE DEPARTMENT SUPERINTENDENT AND APPROVED BY THE PROPER OFFICER.		
PURCHASE ORDER NO. _____	DATED _____	SIGNED _____
ISSUED FOR ABOVE TO _____	SIGNED _____	
SIGNED _____ Form C805-EM-4-67	APPROVED _____	

Requisition form, Madison Gas and Electric Company. Account charge is indicated at left. It provides space for number of purchase order and name of vendor to whom it was issued.

**Purchase order.** White copy for vendor; yellow, purchasing department files; blue copy for stores department. When materials are received they are checked off and copy returned to purchasing department for invoicing purposes. Mr. Koepcke says, "The check system used on receiving reports has its merits in speed of handling orders. The Stores department keeps its own record of receipt and time is saved by the check system on the receiving copy. This is especially valuable where confirming orders are issued."

PURCHASE ORDER Madison Gas and Electric Company MADISON 1, WISCONSIN		PUT THIS No. K 5756 ON ALL INVOICES, DELIVERY SLIPS, CASES & PACKAGES
Vendor copy 7" x 6"		
Please enter our order as follows:		
[Large wavy line for writing]		
Mail invoice immediately after delivery indicating number of this order.		MADISON GAS AND ELECTRIC COMPANY Purchasing Agent

PURCHASING DEPARTMENT FILE COPY Madison Gas and Electric Company MADISON 1, WISCONSIN		PUT THIS No. K 5756 ON ALL INVOICES, DELIVERY SLIPS, CASES & PACKAGES
Requisition No.	Purchasing Dep't file copy is wider than Vendor original, providing space at left as indicated 8 <sup>1</sup> / <sub>2</sub> " x 6"	Invoice for above dated _____ Amounting to \$ _____ Checked by _____
Charge to Account	On Requisition and account as indicated on the Margin for the following:	
[Large wavy line for writing]		

Carbon copies of purchase order are wider than vendor copy, i.e., space is provided at right for recording requisition number and account charge. The original is 7" wide and the copies are 8<sup>1</sup>/<sub>2</sub>" wide.

**Receiving Report** copy of purchase order. The receiving department is instructed to "Check items in as soon as received, whether or not order is completely filled, and return this copy immediately to the purchasing department. If shipment is damaged, or if space is required to note additional deliveries, make notations on reverse side."

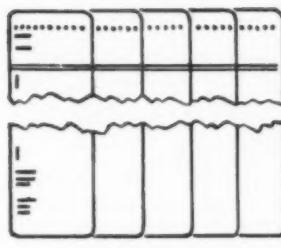
RECEIVING REPORT Madison Gas and Electric Company MADISON 1, WISCONSIN		PUT THIS No. K 5756 ON ALL INVOICES, DELIVERY SLIPS, CASES & PACKAGES
Requisition No.	Also 8 <sup>1</sup> / <sub>2</sub> " x 6"	[Large wavy line for writing]
Charge to Account	RECEIVED DATE: _____	On Requisition and account as indicated on the Margin for the following:
C810-SM-5-68		Signed _____ REMARKS: OVER _____
IMPORTANT: check items in as soon as received, whether or not order is completely filled, and return this copy immediately to Purchasing Department. If shipment is damaged, or if space is required to note additional deliveries, make notations on reverse side.		
		MADISON GAS AND ELECTRIC COMPANY Purchasing Agent

(Forms Forum continued on page 226)

# Forms Specialists Offer New Concept of Economy, Service

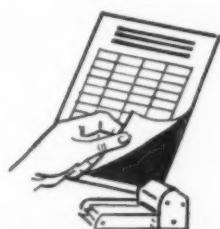
Medium Size Company Develops Efficient U.P.P.\* Printing Method—Allows Big Quantity Prices On Small Quantity Orders—Still Leaves Facilities Open For Low-Cost, Big Run Jobs.

Company Maintains Complete Advisory Staff Of Forms Experts—Money And Time Saving Analysis Of Forms Requirements Available To Every Customer, Big And Small.



Pegboard Forms

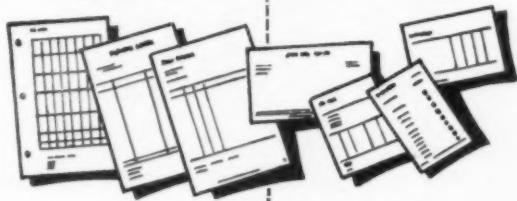
Interleaved Carbon Forms



Duplicating Machine Forms



Bookkeeping Machine Forms



General Office Forms

## Mercury PRINTING COMPANY

pays the same wages, rent, machinery and paper costs as other printers.

but...

Our *Unit Production Plan\**, combining jobs from different customers on one press run *saves money on many forms*. A lot of it! Our U.P.P.\* principle is the same as saving money by riding the bus instead of a taxi. We offer the most economical method of producing *any job*. And when it comes to fast service, our name is *Mercury*.

Our office engineers will work with you to suggest simplifications of your office procedure through intelligent use of time-saving, labor-saving forms . . . at absolutely no cost to you — and absolutely no obligation.

Write or telephone us *today* and our man will come over at your convenience. He will probably save you more money on the design, construction, and actual printing of your forms than you believe possible.

### what others say about our service—

(an excerpt from one of many unsolicited letters in our files).

Mercury was of very great assistance in revamping the design of our payroll envelopes. We were able to eliminate three wire staples and two sets of carbon paper from each envelope in addition to making it easier to handle. You can appreciate how much this meant to us when you realize that we use approximately 9000 of these envelopes each week.

Very sincerely yours,

Customer's Name on Request

**Mercury** PRINTING COMPANY  
200 Hudson Street • New York 2, N. Y. • WALKER 5-5604

# Business Shows Present New Office Machines and Equipment

Three office equipment and furniture shows held the attention of business executives and the trade in the New York City area the latter part of October. One was the Business Show presented annually by Remington Rand Inc. in the Remington Rand Building at 315 Fourth Avenue; a second was the convention and exhibit of the National Office Furniture Associa-

of electricity in the modern office aside from lighting and air conditioning.

Among the exhibits at the Remington Rand show was the new Remington Electric DeLuxe typewriter with finger-fit keys and manifold dial control, which fits all standard fixed-bed, center-drop and pedestal-style typewriter desks. A feature of the machine is typeface designed for greater readability and uniform, clear stencil cutting.

A new Printing Calculator, completely electrified, Model 97, with increased capacity up to a trillion dollars, was announced by Remington Rand. It is claimed to have all the advantages of both calculator and adding machine, plus printed proof of accuracy. All factors and answers of problems are automatically recorded on tape. The "97" multiplies and divides automatically, adds and subtracts, and with the printed tape can also be used for listing. In every calculation the machine completes the problem and clears the keyboard automatically.



This is new Remington Rand printing calculator with capacity up to a trillion.

tion in the Waldorf Astoria; and the 40th National Business Show in Grand Central Palace which drew an attendance of 100,000 during the week October 25-30, inclusive.

These shows presented a vast array of modern and new equipment and devices designed to lighten, speed-up with greater accuracy and dependability, and to simplify every type of office activity from the simple chore of opening letters, or mailing, to the operation of ingenious record and business systems.

New style desks in wood and metal, desks with burn-proof tops, many kinds of new seating, five-drawer file cases but



Remington Rand introduced new line of bookkeeping machines known as the "Foremost".

little higher than four-drawer, and height-adjustable filing stools shared the spotlight with electrically operated typewriters, electronic dictating and transcribing machines, and a myriad of heavy-duty electrical business equipment. In addition there were electrical collators, letter openers, mailing machines, copying and duplicating equipment, and other units attesting the role

Another new unit was the Model 3 Alphabetical Tabulator with instantaneous summary punch, which prints letters and numbers anywhere on a report, 100 on each line if desired, at 100 lines a minute. It also punches summaries of business figures into tabulating cards at the same speed, the instant they are printed on reports.

A new line of bookkeeping machines designated the "Foremost", 500 and 600 series, was also announced by Remington Rand. The new machines are truly functionally styled. Innovations include a streamlined, non-glare case, and finger-grooved organ-type keys. All models are electrified.

Another new unit was the Plastiphoter, a device for preparing photographic offset plates, developed by the Duplicator Supplies Division. This new unit requires less than three square feet of floor space, and with its aid, letters, direct mail advertising, and bulletins of all types may be illustrated with half-tone reproduction with a minimum of expenditure in time and cost. It is used with Remington Rand Plastiplates—offset duplicating plastic plates. The Plastiphoter enables the processing of plates in any office.

Other new Remington Rand units include The Imperial Kardex in new cabinets of light-weight metals, featuring space saving and ease of operation; the new 685 Electric Accounting Machine; and the Film-A-Record Reader Desk, which features an 11" x 14" screen especially coated to eliminate eye strain on which documents are enlarged 23 diameters to original size or larger.



The Meilink Company's Hercules business machine stand which is especially designed for heavy electric office machines.

In addition, complete lines of other business machines and services were on display. Of interest was the finish of furniture and files, termed the Gray-Rite, which introduces new light values and a new factor of cleanliness in office equipment, and at the same time blends nicely with other finishes. The new file cases included a series of 5-drawer file cases of "eye height", providing extra drawer capacity in the space occupied by 4-drawer cases. A new unit of interest was a 4-drawer insulated fireproof file cabinet, the top drawer



The modern space-saving Rock-a-File for easy, quick filing and finding, exhibited by the Rockwell Barnes Co.

of which can be locked, yet permitting free use of the lower drawers. There was also the Kolect-A-Matic desk, with fire-proof insulation, which provides a simplified unit invoice accounting plan, eliminates ledger posting, provides full information on all charges, automatic collection follow up, and enables one girl to control as many as 5,000 accounts.

(Please turn to page 226)

*avoid  
delays  
re-copying  
needless errors*

*use  
UARCO business forms*

**avoid delays with Uarco.** Carbons come pre-set, copies perfectly aligned. Also—  
**avoid re-copying.** A single writing makes every copy the job requires.

**avoid needless errors.** Most errors occur when forms are re-copied; but not with Uarco.

Use Uarco business forms, and avoid the things that make paper work costly. Save time and money all along the line . . . writing . . . distributing . . . checking . . . filing. You can save, no matter what type of business you're in—no matter how large or small. Your Uarco Representative will show you how. Call him in for a complete survey—there is no cost or obligation.



**BUSINESS FORMS**



SINGLE SET FORMS

**UARCO INCORPORATED,**  
Chicago, Ill.; Cleveland, Ohio; Oakland, Calif.; Deep River, Conn.  
*Offices in All Principal Cities.*

**for instance . . . with Uarco E-Z-Outs, one writing** produces every copy the job requires. No carbon mess . . . carbons are already interleaved. Copies are held neatly together for later additions—then detached with one simple operation. E-Z-Outs are only one of many Uarco business forms serving every business, large or small.



CONTINUOUS-STRIP FORMS  
FOR TYPEWRITTEN AND BUSINESS MACHINE RECORDS

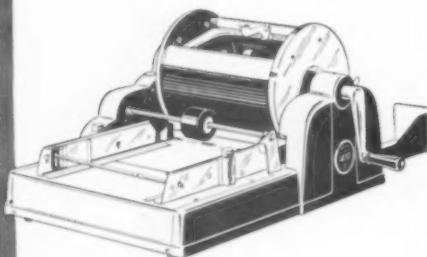


AUTOGRAPHIC REGISTERS  
AND REGISTER FORMS

# NEW A. B. DICK 410 MIMEOGRAPH

WITH A

# NEW LOW PRICE



# NOW

Bulletins  
Menus  
Advertising  
Notices  
Lessons  
Letters

—and other written, typed and drawn material duplicated quickly and economically. A real A. B. Dick mimeograph at a new low price.

### FULL-SIZE DUPLICATING AREA

For use with all makes of suitable stencil duplicating products. See this new mimeograph at your nearest A. B. Dick representative—listed in the phone book—or write for information. A. B. Dick Company, 720 West Jackson Boulevard, Chicago 6, Illinois. The Mimeograph Company, Ltd., Toronto, Canada.

# A. B. DICK



**the oldest name  
in mimeographing**

(Forms Forum continued from page 222)

Purchase Order _____ <b>(5)</b>
Actual Size 4 x 6"
Dated _____
To: <u>M&amp;E Co</u>
Material ordered on your requisition No. _____ is
now scheduled for shipment on _____
Purchasing Agent
#806

This form is used by the purchasing department of the Madison Gas & Electric Company to keep supervisor informed as to shipping status of materials requisitioned.

### BUSINESS SHOWS

(Continued from page 224)

The exhibit at the Waldorf, held in conjunction with the convention of the National Office Furniture Association, included a varied assortment of desks, chairs, safes, filing equipment, posture chairs, and other office accessories and equipment.



Riteform Chair Company's posture line control secretarial chair.

Among the desks was a single pedestal desk for clerical work designed to save space, developed by the Huntington Chair Corp. of Huntington, W. Va. The exhibit of insulated safes, filing equipment, and other units displayed by the Victor Safe & Equipment Co. of No. Tonawanda, N. Y., included the Viseco desk tray—a tray with a movable bottom which greatly simplifies the removal of papers therefrom.

A new item was a secretarial desk especially designed for portable typewriters, exhibited by the Alma Desk Company of High Point, N. C. The Myrtle Desk

Company of High Point introduced a burn-proof wood top desk, the finish of which is also alcohol and water proof. This company also exhibited a secretarial desk with an adjustable height typewriter platform. The High Point Bending & Chair Co., Silver City, N. C., had a "Bank of England Chair" the underframe of which is removable, enabling its conversion into a swivel chair.

The All Steel Equipment Co. of Aurora, Ill., had a complete line of desks and tables on display. The tops are interchangeable to meet individual requirements, permitting the base to be utilized to provide an executive desk with overhang, or a full top desk for general clerical work.

The Corry-Jamestown Manufacturing Co. of Corry, Pa., presented its modern line of island type desks, and also a card filing cabinet featuring extended suspension, which will hold 78,000 cards.

The Cramer Posture Chair Company, Inc. of Kansas City, showed a few new numbers in its general line of chairs. These included a metal posture factory chair for factory workers which is available in low and high models, and for use where a foot-rest is desirable. Another item was a draftsman's chair with tilting seat, the back of which follows with the body and provides desired support. Foam rubber cushions are available, slotted across the middle, to obviate possible seating discomforts. The line also included a desk chair with height control to furnish seating comfort for long or short persons, and a filing stool with height control.

The Meilink Steel Safe Company of Toledo, exhibited its Hercules business machine stand, which is especially adapted for electric business machines. The con-

(Please turn to page 228)

# The *NEW* IBM Electric Typewriter



If it's IBM . . . it is electric

This latest product of IBM's long experience in designing and manufacturing all-electric typewriters possesses all the proved advantages of our previous models, plus many important improvements. It has been engineered and styled for finer performance and appearance.

Meeting every typing need of modern business, the new IBM Electric Typewriter is available in

the Standard and Executive models. The unique spacing principle of the Executive model gives to the typewritten page the distinctive appearance of fine printing.

Our representative will be glad to demonstrate the new IBM Electric Typewriter at your office, or at the International Business Machines office in your locality.

**INTERNATIONAL BUSINESS MACHINES CORPORATION**

World Headquarters Building, 590 Madison Ave., New York 22, N. Y.

*Offices in the principal cities*



**UNITED STATES ENVELOPE CO.**  
Springfield 2, Mass.  
13 MANUFACTURING DIVISIONS  
LOCATED FROM COAST TO COAST

See your Printer or Paper Merchant

THIN PAPERS  
*Reduce*  
TYPING, MAILING  
and FILING COSTS  
*Use*  
**ESLEECK**  
THIN PAPERS

Fidelity Onion Skin

Clearcopy Onion Skin

Superior Manifold

**Esleeck Manufacturing Co.**  
Turners Falls, Mass.

### BUSINESS SHOWS

(Continued from page 226)

struction and design eliminate vibration and creeping of the stand.

The National Business Show at the Grand Central Palace was a veritable exposition of modern time and labor saving business equipment of all kinds, and



The Bruning Company's No. 93 Whiteprinter which is designed for volume production.

was featured by fascinating exhibits of big-name exhibitors, such as IBM, Addressograph-Multigraph, Diebold, Inc., Burroughs, Elliott Addressing Machine, General Fireproofing, Marchant, Acme Visible Records, Pitney-Bowes, Ditto, Dictaphone, Acme Visible Records, Monroe, Friden, Domore, Charles Bruning, Soundscriber, Speed Products, and more than a hundred others.

International Business Machines among other things introduced its newly designed all-electric typewriter, electric time system, electronic calculating punch, high speed sorter, punched card accounting machines with the three-time listing feature, and other equipment.



One of the new General Fireproofing Company's executive desks with overhang.

The Charles Bruning Company exhibited the Bruning Whiteprinter, Model 93, which will produce whiteprints at speeds up to 30 feet per minute, with all controls within easy reach of the operator. The machine is especially designed for large volume whiteprint production. The model 21 for moderate volume users was also displayed.

The General Fireproofing Company exhibited its Mode-maker metal office desks, Goodform aluminum chairs, and space-saving Super-Filer. The latter is a 5-drawer unit, the drawers of which provide four inches more of usable filing space than a rigid front file drawer of the same inside depth. The units stand only about five inches higher than the 4-drawer units.

The Marchant Calculating Machine Company exhibited for the first time, its new Figuremaster automatic electric calculator for automatic multiplication, di-

vision, addition and subtraction, whose scientifically designed key-tops guard against operator error and speed up touch-system operation.

The Soundscriber Corporation demonstrated its dictation and recording equipment, and its new automatic SoundEraser which erases recordings on the Soundscriber plastic disc. Electrically powered from any conventional outlet, the SoundEraser spins the disc in a bath of heat and infra-red rays, which does the erasing job in less than a minute. Each disc can be erased 25 times or more.

The Ralph C. Coxhead Corporation of New York, gave demonstrations of the new model DSJ Vari-Typer with differential letter spacing which gives finished copy the appearance of metal-cast type composition. The new machine has only three rows of keys, and one of the outstanding features of the work done by the machine is its uniformity, each letter being sharp and uniformly black. Two type fonts can be used at one time, and changed from



Here is a battery of Robotypers operated by one girl.

one to another by the twisting of a knob. Justification of lines is achieved by spacing between words rather than letters, producing copy that is easy to read.

The Dictaphone Corporation exhibited a new dictating machine that records on flexible plastic belts. The new machine, known as the Time-Master, is compact, and light enough to be taken on business trips. This is a complete electronic dictating machine, and the medium for recording is known as the Memobelt, a small endless plastic (ethylcellulose) belt, which can be easily filed, or mailed. Transcribing is done on the Time-Master Twin, an electronic unit, which is featured by clarity and ease of handling.

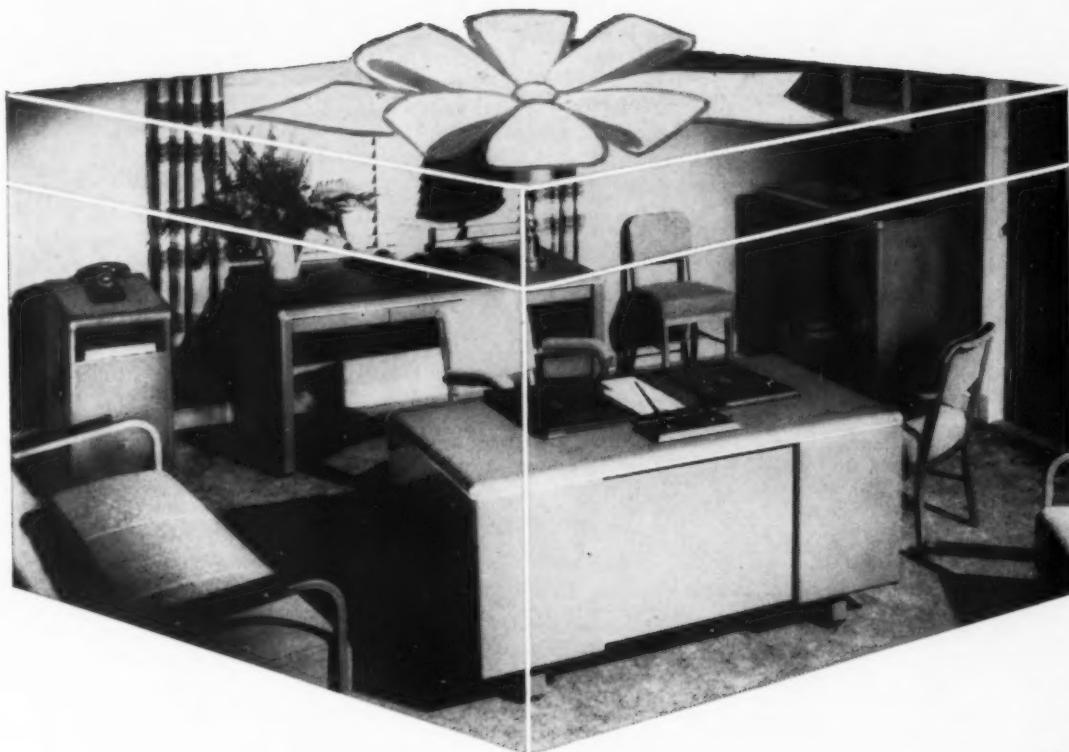


Marchant's new Figuremaster automatic electric calculator.

A completely electric collator was displayed by the Thomas Mechanical Collator Corporation of New York. Known as the Gathermatic, it will "with the flip of a switch" collate sets in groups of two sheets (Please turn to page 230)



*crestline greetings*



Yes, it would make a rather large gift to fit  
beneath your Christmas tree, but we just wrapped  
it up this way to remind you that when you buy  
CRESTLINE office furniture, you are receiving  
superior designing, exceptional workmanship and matchless  
efficiency. Be sure to learn all about this better equipment  
by calling your dealer or by writing for a CRESTLINE  
Desk folder . . . it will be sent you promptly.



**SECURITY STEEL EQUIPMENT CORPORATION • AVENEL, NEW JERSEY**

# GET A MORTGAGE PAPER THAT Pays Off

*High opacity* is one of the most important qualities a mortgage paper can have. It makes reading easy. It lends importance to a document . . .

Ask your printer—the expert . . . For mortgages or other documents super opaque Rising Parchment pays off in the quality impression it creates for your organization.



## Rising Parchment

- ✓ 100% rag
- ✓ super opaque
- ✓ 6 standard sizes of envelopes
- ✓ distinctive unglazed parchment finish
- ✓ four weights

WHEN YOU WANT TO KNOW . . . GO TO AN EXPERT!



# Rising Papers

ASK YOUR PRINTER . . . HE KNOWS PAPER!

Rising Paper Company, Housatonic, Mass.



The Ideal Christmas Gift  
**FOR HIM**

For comfortable sitting in the office, or at home in the den, Do/More Executive Chairs are tops with thousands of business and professional men. A Do/More is the ideal Christmas gift for yourself or a business associate. For name of your local Do/More representative and free copy of booklet, "Physical Fitness," write: DOMORE CHAIR COMPANY, INC., Elkhart, Ind. Department 1212

**DO/MORE**  
POSTURE CHAIRS



## DUPLISTICKERS

will simplify your direct mail addressing problems

1. Duplicate labels (2 to 4) can be typed in one operation.
2. Office typist can address small mailing lists.
3. For frequent mailings from name list—quantities can be run off on office ditto or mimeograph machines.
4. Ideal for addressing large envelopes, sample packages, etc.
5. Keep a quantity of your return address labels to place on envelopes and postal cards.
6. For sealing and addressing folders, broadsides, double postal cards, etc., in one operation.

Letter size sheet of 33 perforated labels. Choice of 5 "keying" colors. **50c** per package.

On sale at your stationer. For application to your direct mail problems write



**EUREKA**

EUREKA SPECIALTY PRINTING COMPANY  
STATIONERY DIVISION DEPT. P  
Scranton, Pennsylvania

## BUSINESS SHOWS

(Continued from page 228)

or more, reject incomplete sets, measure each set for accuracy, staple sets optionally, and deliver collated sets (stapled if desired) at a rate of 1,500 sets per hour.

Among the new items in the Pitney-Bowes exhibit of mail openers, postage meters and mailing machines was a new type "MailOpener" in desk model type for small offices with relative light incoming mail. It simplifies and speeds up the open-



The Goathermatic will deliver 1500 collated sets per hour—stapled.

ing of the mail. There was also exhibited a new hand operated postage meter which prints postage in any value for all kinds and classes of mail, including airmail, special delivery and parcel post. It stamps and seals letters simultaneously while postmarking and dating them. A metered mailing machine, electrically driven, stamps and seals mail at the rate of 175 pieces per minute. It handles mail of all kinds and classes.

Also among the exhibits drawing considerable attention was the Robot Typer—called the "Robotyper" which types routine or special purpose letters, forms or reports at three times hand speed, with carbon copies or in two colors. Operation is merely



The new type Vari-Typer received considerable attention.

a matter of inserting a letterhead, touching a button, and the machine types the letter while the operator turns to other duties. There was also the Robo-Tandem-Typer, with two or three typewriters in series, manually operated. The typist operates one machine, and the others automatically write the same letter.

There were scores of other interesting exhibits and demonstrations. Lack of space makes it impossible to give a detailed description of the three shows. However, it is obvious that future shows warrant the attendance of executives interested in modern, low-cost office operation.

SEE CLASSIFIED SECTION  
PAGE 310

**lighten your office...**

## **LIGHTEN YOUR WORK!**

with *Aristocrat* FILING CABINETS

IN DISTINCTIVE "GRAY-RITE"

*Color-Engineered*

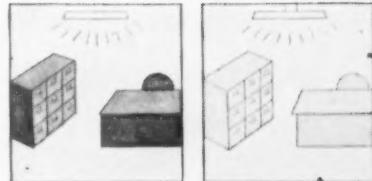
### **for BEAUTY—**

Softly gleaming, rich GRAY-RITE enamel finish imparts thrilling new beauty to office surroundings—it's the filing cabinet with the "decorator look." Aristocrat is arousing admiration everywhere: with office personnel, customers, management. You feel *better* when you work and do business in light, harmonious surroundings.



### **for SIGHT-SAVING—**

Unlike dark finishes, which absorb light, GRAY-RITE sends light back into the room, softened and diffused, in just the right intensity for eye comfort. This smart, new finish reflects *virtually twice* as much light as traditional olive green—decreases eye fatigue too by reason of lessened contrast between work surfaces and white papers and documents.



### **for ADAPTABILITY**

Your Aristocrat files in GRAY-RITE blend perfectly with other filing cabinets already in use in your office. GRAY-RITE takes on a delicate tinge of whatever color is next to it: green, brown or mahogany—while becoming even more attractive itself, it creates new color harmony with its "neighbors."



• The new Aristocrat filing cabinet possesses all the traditional superiorities of this distinguished line, plus numerous improvements: it's even sturdier, still more easy to operate, has many additional years of trouble-free wear built into it. Available in 2, 3, 4 and 5-drawer heights in letter and legal size, plus a complete

range for all sizes of paper and card records.

Get the complete story on how Aristocrat will beautify your office, lighten your work, save you money—send for FREE brochure LB 356 *The Mark of Quality and Distinction in Steel Files*. Call our office nearest you, or write Systems Div., 315 Fourth Ave., N. Y. 10.



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**The FIRST Name In Office Equipment**



# PROVE IT ...in your own Plant!

Try "Height-that's-right seating" 30 DAYS FREE

Let us send you one Kewaunee Automatic Adjustable Chair or Stool to try 30 days without cost or obligation. Test it with workers of different heights—see how by simply lifting the seat your employee instantly gets "height that's right" seating. No fussing with screws, bolts or tools. Watch production go up when comfort comes in.



**KEWAUNEE MFG. CO.**  
5006 S. Center St. • Adrian, Mich.

## MacRae's Blue Book

The Complete Buying Guide for Every Industrial Product — All in ONE BOOK



MacRAE'S BLUE BOOK is handy—efficient—accurate—more accessible—more manageable. Over 75,000 copies are in constant use every day.

56th edition closing. For advertising rates call your agency or write to **MacRAE'S BLUE BOOK** Co. 18 E. Huron Street, Chicago 11, Ill.

### NEW APPOINTMENT BY MCBEE COMPANY

J. H. Preston, Jr., has been named assistant to H. C. Davis, vice president in charge of sales of the McBee Company. Mr. Preston will be located at the company's general sales headquarters in New York City.



J. H. Preston, Jr.

At the time of his appointment, Preston was manager for McBee in Philadelphia. He joined McBee in 1936 as a salesman in Wheeling, West Virginia, and later was transferred to Pittsburgh. In September, 1941, Preston was made manager at Buffalo.

1 1 1

### NIAGARA CONSOLIDATES

Niagara Duplicator Company, manufacturer of duplicating machines and supplies, has consolidated its operations at Concord, Calif. Facilities at Concord have been expanded to accommodate all activities, including those formerly carried on at the San Francisco plant.

1 1 1

### ROYAL NAMES GREEN TO BE BROCKTON MANAGER

D. B. Starrett, Vice President in charge of sales for all products of the Royal Typewriter Company, has announced that Charles W. Green, former salesman at New York, has been promoted to the management of the Brockton, Massachu-



Charles W. Green

setts branch office. Green began his career with Royal as a typewriter salesman at Los Angeles in October, 1939. During the war years he served in the Merchant Marine. In September, 1945, he returned to Royal as a salesman in the New York Office.

(Please turn to page 234)



...nothing can beat an  
**UNDERWOOD SUNDSTRAND**  
**Adding-Figuring Machine**

**Her fingers ripple over the 10-numeral keyboard  
... touch a motor bar ... and there's her total.**

It's as simple as that...and as fast.

The keys of the Underwood Sundstrand are arranged in natural sequence under the finger-tips of the right hand. Even untrained operators pick up the "touch" method . . . after a few minutes' practice.

This machine is quiet, too. Key action has been cushioned...operating noises muffled. There's no annoying jar or clatter to hinder concentration. As a result operators are more relaxed...*and more accurate*.

Yes, for speed, simplicity, accuracy in adding and figuring you're sure to agree... there's nothing like an Underwood Sundstrand. For a complete demonstration call your nearest Underwood representative today!

## 5 Reasons WHY YOU should say *"Underwood Sundstrand"*

- 1. SPEED.** World's fastest keyboard. Only 10 numeral keys under the finger-tips of one hand.
  - 2. EASY TO LEARN.** No long training period for operators. Even untrained personnel learn the "touch" method in a few minutes.
  - 3. NO HEAD SWINGING.** Operators keep their eyes on their work...*not the keyboard.*
  - 4. MADE IN MANY MODELS.** Made in sizes and models to fit any business... large or small.
  - 5. WORLD LEADER.** Backed by 50 years of craftsmanship and research in producing typewriters, adding-figuring and accounting machines which "Speed the World's Business." Sales and service everywhere.

## **Underwood Corporation**

## VISIRECORD INC. OPENS WASHINGTON OFFICE

President Herbert Weston of Visi-Record, Inc., of New York, recently announced the opening of a representative



Joseph J. Osborn

office in Washington, D. C. at 1025 Connecticut Avenue, with Joseph J. Osborn as manager. For the past 6½ years Mr. Osborn has been associated with Government agencies.

### AUTOMATIC STAMP VENDING MACHINE AVAILABLE COMMERCIAILY

The Automatic Stamp Vending Machine, manufactured by Commercial Controls Corporation, Rochester, N. Y., is now available to commercial users. The machine, which dispenses commonly used denominations of postage stamps at face value, was originally developed and perfected to meet the specifications of the

U. S. Post Office Department and the exacting requirements of the U. S. Bureau of Standards.

Heretofore, vending machines have been used commercially which dispensed stamps at a profit. The Commercial Controls Automatic Stamp Vending Machine is the first one to issue them in various denominations at post office prices. It will vend five 1¢ stamps for a nickel, five 2¢ stamps for a dime, and five 3¢ stamps for a nickel and a dime. Thus the machine delivers postage for any type of mail including air mail.

The machine is extremely simple to operate because it is completely automatic. The mere insertion of the correct coin operates the mechanism which delivers the stamps. It is equipped with a sensitive detector which rejects spurious coins.

The Automatic Stamp Vending Machine is made in one model only, which occupies 21 inches by 14 inches of floor space and stands 60½ inches high. Descriptive matter is available upon request.

### CHECKLIST OF PUBLICATIONS OFFICE AND FACTORY PRODUCTIVITY

The American Management Association has published a checklist of 61 studies providing information on increasing productivity in factories and offices for production executives, personnel directors, and office managers. Case histories, analyses, and recommendations by nearly 200 experts on productivity are presented in the studies.

The list is available on request to the Association at 330 West 42nd Street, New York 18, N. Y.

### OLD TOWN COMPANY NAMES CANADIAN DISTRIBUTOR

The Old Town Ribbon and Carbon Company, Inc., of Brooklyn, N. Y. has appointed the Carbon Paper Service Bureau, 94 Adelaide Street, West, Toronto, Canada, as exclusive distributor of Old Town Products for Toronto and the Province of Ontario.

### INTERESTING LETTERHEADS IN HOWARD SAMPLER

The "Howard Bond Sampler for Business Executives" which is available from The Howard Paper Company Division of Urbana, Ohio, is a handy file size sampler which contains a number of interesting letterheads reproduced by letterpress, offset and engraving, and a set of the "most-used" business forms on bond stock in various colors which are available in four weights, namely, 13, 16, 20 and 24, in all standard sizes, and 12 colors in addition to white and cream.

A unique feature of the Sampler is a play kit for children termed the "United States Pasteup Map", in Howard bond colors, with which they can make an attractive wall map. Copy of the Sampler may be had for the asking.

## in the BEST PLACES ON MERIT ALONE

Spirit and Hektograph Carbon  
Master Units  
Dupliforms (Printed Master Units)  
Carbon Paper  
Non-Curl Carbon Paper  
Inked Ribbons  
Carbon Paper Ribbons  
Carbon Paper Rolls  
Stencil Duplicator Inks  
Duplicating Fluid  
Hand Cleansing Cream



OLD TOWN

RIBBON & CARBON CO., INC.

FACTORY AND  
GENERAL OFFICE

750 PACIFIC ST., B'KLYN 17, N. Y.

For most makers of  
Ribbons and Carbons for Every Use  
Sales and Service  
Everywhere

PACIFIC COAST OFFICE  
843 S. LOS ANGELES ST.  
LOS ANGELES 14, CALIF.

Fine  
diamonds



Selections sent for inspection  
without obligation.

L. & C. MAYER'S CO.

Diamond Merchants since 1912

545 FIFTH AVENUE, NEW YORK 17, N.Y.

Christmas 1948

Seldom, since the beginning of Christendom, have intolerance and tyranny been so rampant to perpetuate turmoil and Godlessness throughout the world as on this anniversary of the birth of the Prince of Peace. ■ Surely, this is a time for strong minds and stout Christian hearts to remain calm and firm in their unwavering faith in God and to pray for His guidance and wisdom that we may keep this great democracy of ours united against the brute forces of hate and unenlightenment. ■ Yet, let us be charitable and understanding toward all peoples. Let us overcome our own shortcomings and be determined to defend the principles of Christianity so that all mankind may enjoy the fruits of freedom and the right to worship God.

INTERNATIONAL PAPER COMPANY

# Where to get NEW ITEMS— NEW SOURCES OF SUPPLY... quick



A specialized buying directory designed and built for production, purchasing and engineering executives—to assist them, in the easiest manner, to secure sources of supply for all equipment, products or supplies used by industry.

Compact, complete and yet easy to handle—that's CONOVER-MAST PURCHASING DIRECTORY.

Five separate sections make up this directory—A CLASSIFIED SECTION, containing the names and addresses of manufacturers classified by product—A TRADE NAME SECTION, listing alphabetically the trade name of the product with name and address of the manufacturer—An ADDRESS SECTION, giving the names and addresses of American manufacturers—A CHEMICAL SECTION, listing by product the name and address of important manufacturers—A MECHANICAL DATA SECTION, giving 34 pages of helpful tables, formulas, etc.

Use CONOVER-MAST PURCHASING DIRECTORY! You'll really like it.

If by chance you haven't a copy, write us. We want every industrial buyer to have the benefits of this handy purchasing reference.

Incidentally, mentioning CONOVER-MAST PURCHASING DIRECTORY, when sending out inquiries, means much in helping to increase our service to you.



## Conover-Mast PURCHASING DIRECTORY

333 N. Michigan Ave., Chicago 1, Ill.  
A Conover-Mast Publication

FORMERLY  
PLANT PURCHASING DIRECTORY

### TWO NEW PHOTOCOPY PAPERS ADDED TO KODAGRAPH LINE

Two new papers for photocopying have been added to the Kodagraph line of photographic materials for engineering and office reproduction.

A new ledger-duplitzed contact paper, coated on both sides of the sheet, has been announced by the Eastman Kodak Company, together with a new Kodagraph Projection Paper on standard weight stock. Hitherto Kodagraph Projection Paper has been available only in extra thin and in ledger weights.

The new Kodagraph Contact Paper, Ledger Duplitzed, permits prints to be made on both sides of the paper and is extremely useful for bound records, contracts, catalogues, and similar documents.

Exposure latitude of both papers assures matched quality prints of maximum readability.

### 111 NAMED McBEE MANAGER AT PHILADELPHIA

Bayard T. Kiliana has been appointed manager of the Philadelphia office of the McBee Company, replacing J. H. Preston



Bayard T. Kiliana

Jr., recently promoted to assistant to H. C. Davis, vice president in charge of sales. At the time of his appointment Mr. Kiliana was a salesman for McBee in Pittsburgh.

### 111 IMPROVED IBM ATTENDANCE TIME RECODER

An improved, fully automatic attendance time recorder, designed to give superior results in time registration, has been announced by International Business Machines Corporation.

With an IBM Attendance Time Recorder an employee merely inserts his time card in the receiver—there are no bars or levers to push. The registration is printed automatically. A new sensitive card-trip causes the recording to be made quickly on light weight or standard card stock without chance of mutilation. The machine prints in a fraction of a second.

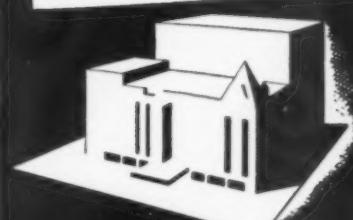
The improved Recorder is housed in a new durable one-piece drawn steel case with a smooth gray finish. It has a modern, attractive design.

The improved Recorder also incorporates the following features:

Variations in electric power and in the force with which the card is inserted do not change the uniformity of registration.

All time indications are printed on the front of the card for ease and speed in checking cards and registrations.

# 1000 ROOMS IN **CLEVELAND**



## **HOTEL HOLLENDEN**

ROBERT P. JOYCE  
GENERAL MANAGER

### What's New?

HERE'S an easy way for you to keep abreast of NEW developments in materials, equipment, finishes and processes:

Every month you will find listed in the "Ask Purch" Section — Pages 14 to 20, incl., from 75 to 100 new pieces of manufacturers' literature.

TAKE your selection of the literature of interest to you, and which you may need to bring your catalog files up to date.

And, check the numbers on the post-paid postcards on Pages 19 and 20. "Purch" will see that the material is sent to you without cost.

Ask Purch

Easily-read hour and minute numerals on the front of the Recorder enable employee to check his IN and OUT time.

Printing can be changed from blue to red at practically any minute of the day to indicate off-schedule registrations.



Signals can be sounded automatically at almost any time of the day to indicate stopping times, starting times or rest periods.

Records can be furnished for individual operation from supervised alternating current frequency or from direct current, or for operation from any IBM Electric Time System.

#### NEW TYPE PERMANENT AND CONTINUOUS SOUND RECORDER

A radically new type of permanent and continuous sound recorder is now being introduced by the Miles Reproducer Co., Inc., 912 Broadway, New York, N. Y. It is styled the MRC Filmgraph Recorder-Reproducer, and it records lengthy conversations, interviews, reports, court proceedings, two-way telephone conversations, dictation, etc., permanently on a safety film.

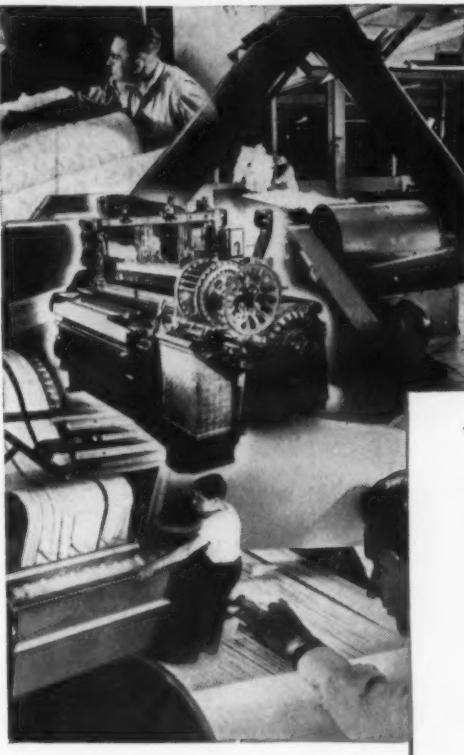
Using a large reel of M2 Safety Film which has a total recording capacity on both sides of 200 hours, each recording may be uninterrupted and continuous for one hour on each of the 100 sound tracks across each face of the film.

Recording is made from a microphone or the telephone with perfect clarity for instantaneous and permanent playback using the same machine or a separate playback unit through earphones, "soft", or auditorium type loud speaker.

While recording is permanent, corrections may be instantly made by re-recording over the incorrect matter in a slightly louder tone of voice, according to the Miles company. The safety film used is said to be practically indestructible and non-flammable. Notations may be made directly on the film with a ball point pen or a China marking pencil.

The MRC model, which measures 4" x 8" x 9", weighs 11 pounds, and operates on 110-v a-c, or on any other voltage using an inverter or transformer. The model is completely equipped for recording and playback. Extra accessories include the audio-self-start-stop which enables automatic recording as soon as voice is spoken into microphone or telephone; remote control unit, sound track indicator, zone indicator, telemike for recording two-way telephone conversations, and soundtrap for picking up and recording sound at greater distance from microphone.

#### Prominent Users of Strathmore Letterhead Papers: No. 80 of a Series.



*The Textile Research Department of Aviaco tests new developments, constantly exploring means of "doing it even better."*

AMERICAN VISCOSA CORPORATION  
200 PARK AVENUE, NEW YORK, N. Y.  
Schenectady 6-1200

**Has your letterhead  
kept up with the times?**

Throughout the country, astute business firms are keeping abreast of the new era we've moved into...improving products...designing new plants, new packages, new letterheads. Whatever your business, large or small, it is highly important these days for your letterhead to express the alert, progressive character of your organization.

It is no mere coincidence that so many leaders of industry prefer Strathmore papers for their letterheads...organizations such as the American Viscose Corporation, whose industrial and research activities have made it the largest producer of rayon in the world.

Does your present letterhead tell your public that your company is moving ahead with the times? If not, we suggest you explore the subject promptly...get the producer of your letterheads to present new designs on Strathmore expressive papers.

*Strathmore Letterhead Papers: Strathmore Parchment, Strathmore Script, Thistlemark Bond, Alexandra Brilliant, Bay Path Bond, Strathmore Bond, Strathmore Writing.*

**STRATHMORE** MAKERS OF FINE PAPERS

Strathmore Paper Company, West Springfield, Massachusetts

# *Among the* ASSOCIATIONS

## WASHINGTON ASSOCIATION HAS ANNUAL MANUFACTURERS' AND DISTRIBUTORS' NIGHT

The 19th annual "Manufacturers' and Distributors' Night" meeting of the Purchasing Agents Association of Washington was held in the Chamber of Commerce building, Seattle, Wash., on Wednesday evening, November 10. More than 650 purchasing agents, manufacturers, sales managers, engineers and other business executives attended the affair.

Rt. Rev. Stephen F. Bayne Jr., Bishop of the Diocese of Olympia, Seattle, was the chief speaker on the topic "The Kind of a World We Want". Kenneth A. Knudsen Purchasing Agent, Everett Pulp and Paper Co., Everett, and president of the Purchasing Agents Association of Washington, presided. Robert Grube, treasurer of the Washington Machinery and Storage Co. was the toastmaster.

Honored guests included: William F. F. Devin, mayor of Seattle; H. Arends, mayor of Everett; Nat S. Rogers, president of the Seattle Chamber of Commerce; Leon Titus, president of the Tacoma Chamber of Commerce; Harold H. Cake of Portland, western vice-president National Association of Purchasing Agents; Irl Janssen, president, Seattle Association of Credit Men; Russell Young, president, Seattle Sales and Advertising Club; Rowland Johnson, president, Industrial Advertisers' Council of Western Washington; Arthur J. Longpre, president Sales Executives Club of Seattle; Star Yocom, president, Transportation Club of Seattle; Fred Tolan, president, Industrial Traffic Managers Association; Jack Andrews, president, Seattle chapter, National Office Managers' Association; Alex Dunbar of Vancouver, B. C., president, Purchasing Agents Association of British Columbia; R. P. Stockwell of Portland, president, Purchasing Agents Association of Oregon; Dorothy Brown, president Women's Division, Purchasing Agents Association of Washington; and I. S. Fetterman, president, Inland Empire branch, Purchasing Agents Association of Washington.

Stage entertainment was presented by E. A. Hurley, entertainment chairman, with Joel Wilgin as master of ceremonies. Merchandise prizes were awarded.

1 1 1

## "GENTLEMAN FROM INDIANA" ADDRESSES NEW YORK MEETING

Samuel B. Pettengill, former congressman, was the principal speaker at the November 16 dinner meeting of the Purchasing Agents Association of New York, at the Builders Exchange Club, his subject

being "The Politicians and the Giant."

At the preceding Forum meeting, W. H. Mysch, sales manager, Business Information Division, Dun & Bradstreet, spoke on "Marketing Research in Purchasing."

A special feature of the dinner meeting was the showing of an interesting color picture entitled "Helping the Blind to Help Themselves", which impressively shows how sightless persons have been successfully taught manufacturing skills. The picture was produced by the Industrial Home for the Blind, Brooklyn, N. Y.

The association's annual Christmas party, which for more than 25 years has taken place of the business meeting in December, is scheduled to be held at the Pennsylvania Hotel on December 21st.

The receipt of thirteen membership applications was also announced.

## OVER 400 ATTEND DISTRICT 2 ANNUAL CONFERENCE HELD IN DALLAS OCTOBER 28-29

Over 400 purchasing agents and suppliers of the Southwest attended the Second Annual Purchasing Conference of Associations in District 2 of the N.A.P.A., held in the Adolphus Hotel, Dallas, Tex., on October 28 and 29. The highly interesting and successful meeting covered a wide variety of topics involving many fields of industry.

A. Von Wenig, vice-president of the A. O. Smith Corporation, Milwaukee, Wis., one of the principal speakers on the second day of the conference, warned the members that the economy of the nation is still held firmly in the grip of inflation.

(Please turn to page 242)

## Buffalo Assn. Host to District 8 Meeting



Special guests from out-of-town associations attending the Eighth District Council Meeting in the Hotel Statler, Buffalo, N. Y., on October 8, sponsored by the Purchasing Agents Association of Buffalo, are shown above.

In the first row, from the left, are: Lloyd W. Wieder and William Diehl of the Lehigh Valley Association; John E. Edmonds of the Syracuse Association; Jack Rutherford of the Buffalo Association; Harold H. Frair of the Eastern New York Association; and Clarence J. Miller of the Philadelphia Association.

Those in the middle row, from the left, are: James Cooney of the Rochester Association; William J. Young and Albert H. Schultz of the Baltimore Association; Richard T. O'Connor of the Elmira Association; James Scammon of the Washington (D. C.) Association; David M.

Meeker of the New York Association; and Samuel L. Henry of the Reading Association.

Standing are: Harry D. Grow of the Buffalo Association; Charles C. Fichtner, executive vice-president of the Buffalo Chamber of Commerce; Walter J. Wolf and Chester M. Bell of the Buffalo Association; Hack Jones of the Philadelphia Association; Donald H. Lyons of the New York Association; William J. Gamble of the Buffalo Association; Austin C. Ross, works manager, Worthington Pump & Machinery Corp., a past national vice-president of N. A. P. A.; Russell Byers of the Reading Association; Robert A. McCutson of the Carolinas-Virginia Association; Wilson B. Wight of the Rochester Association; and Charles L. Patchin of the Syracuse Association.

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## Washington Correspondent Guest at St. Louis Association Meeting



Shown above is the scene at the speakers' table at the October meeting of the Purchasing Agents Association of St. Louis, at which Harold K. Howe, author of the La Salle Washington Letter, was guest speaker. Left to right: Warren J.

Matthews, treasurer; K. W. Guillerman; Lee J. Bussman; Frank Golick, vice-president in charge of sales, LaSalle Steel Co.; Mr. Howe; A. W. Soell, president of the association; Preston M. Green, secretary; D. M. Baker, 1st vice-president;



Frank J. Connell, 2nd vice-president; Lou C. Gragg, national director; and Chas. D. Hoffman. Two educational forums on the topics "Purchasing Function and Ethics of Purchasing", and "Requisitions", preceded the meeting.

### FREIGHT CONSULTANT SPEAKS AT HAWAII ASSN. MEETING

Merchandise costs can be reduced appreciably if Honolulu merchants will pay closer attention to the freight-cost factor on goods from point of origin, members of the Purchasing Agents Association of Hawaii were told at their dinner meeting on October 28. The guest speaker was Herbert A. Rusk, commercial traffic consultant, who also operates the Transea Forwarding Company. He told the purchasing agents that handled properly, freight cost can be cut from 5% to as high as 50%.

Mr. Rusk spoke in detail on the subject of routing, class ratings, specific commodity rates and rules and regulations prescribed in freight tariffs that govern the movement of all shipments.

The six points of advice he offered the purchasing agents are: (1) audit freight bills before payment; (2) pre-route shipments; (3) obtain specific terms of sale; (4) insist on receiving by airmail bills of lading showing cubic measurement as well as weight; (5) indicate correct commodity description on shipping papers, and (6) re-form one's purchasing policy to take advantage of lower rates.

A sound movie entitled "A Million Dollars A Day", produced by Remington-Rand, Inc., was shown. It depicts the extent of damages a fire can do to improperly stored records.

### GEORGIA ASSOCIATION PLANS EDUCATIONAL PROGRAM

Future plans of the Purchasing Agents Association of Georgia call for an educational program embracing a course in advanced purchasing given at Georgia Tech, with all purchasing agents contributing case examples. Meetings are scheduled for one night each week with a two to three hour session. The University has already granted permission for use of classroom facilities.

Plans for the course have aroused a good deal of interest and enthusiasm among members, since not only they, but their entire staffs, are invited to attend. These meetings will be in addition to the regular monthly meetings.

The annual Christmas party of the association has been planned for December 17, with ladies invited. The affair will be held in Brittain Dining Hall, Georgia Tech.

The association has been conducting a poll among members on the question of inaugurating either a bulletin or magazine. Results will be announced shortly.

Members visited the plant of the Atlantic Steel Company on October 29, and saw how nails, fencing, iron and steel bars, forgings and other items are produced. About 60 attended. The group had dinner at the company cafeteria, as guests of the management, and heard a talk by R.S. Lynch, president.

1 1 1

### STEEL DISCUSSION FEATURES BALTIMORE ASSN. MEETING

A discussion on steel featured the regular meeting of the Purchasing Agents Association of Baltimore, held at the Lord Baltimore Hotel on Wednesday evening, November 17. The discussion was lead by Frank Carter, Purchasing Agent of Maryland Drydock Company; C. Edgar Melvin of the Standard Gas Equipment Company; and J. B. Coster of the Bethlehem Steel Company.

Included in the scope of the discussion were these questions:

1. What are you buying?
2. How do you plan your steel requirements with your production department?
3. How do you schedule your requirements with the mills?
4. What do you do in case of unanticipated requirements?

Following the dinner, Dr. R. G. Steinmeyer of the University of Maryland talked to the group on "The International Situation".

### EDUCATION STRESSED BY HOUSTON ASSOCIATION

A constructive program of activities is scheduled by the Education Committee of the Houston Purchasing Agents Association, under guidance of W. R. H. Mau, Purchasing Agent of Missouri Pacific Lines, committee chairman.

Plans have been approved for conducting another contest among business administration students at the University of Houston, paralleling a similar contest held during the spring of this year. A total of \$150, including three prizes of \$50 each, will be awarded for the best papers submitted by students on the subject of purchasing. Rules governing the contest will be announced in the near future.

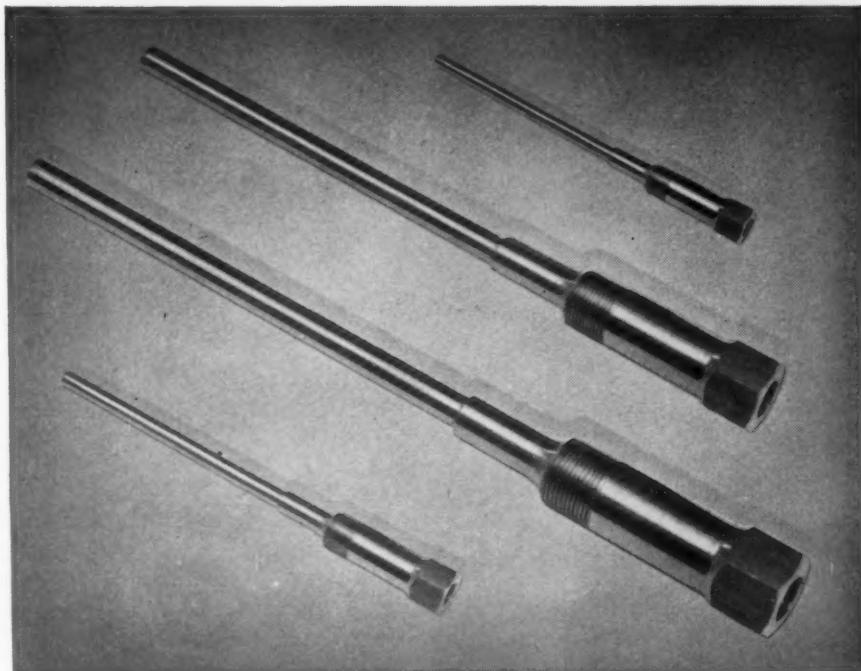
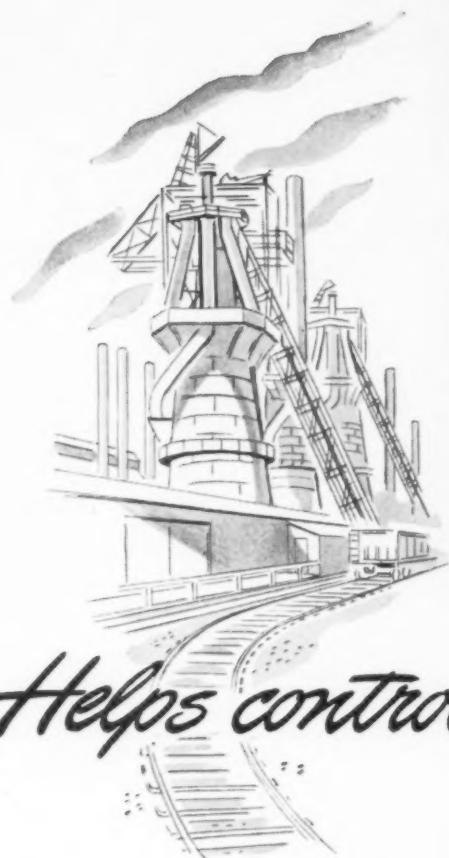
As an outgrowth of the association's educational activities and its sponsoring of the student contest earlier this year, the University of Houston has announced plans to conduct a class in purchasing during the 1949 spring term. The course will be open to students and to employed industrial personnel, and will carry college credit. Night classes will be held twice weekly. The association will not officially sponsor the course, but agreement has been made to extend all assistance possible in the conduct of classes.

The series of one-hour open forum and discussion sessions, begun in the spring, is being continued. The forum periods are held preceding the regular night meetings, and strong interest in the discussions has been expressed on the part of the membership.

Members of the Education Committee, in addition to Mr. Mau, are Earl R. Cobden, Hughes Tool Co.; F. T. Fendley, Humble Oil & Refining Co.; C. S. Frink, Dow Chemical Co.; Sam H. Harper, Pure Oil Co.; and Ivan B. Nevill, Cameron Iron Works.

(Please turn to page 244)

# Free-Machining ENDURO STAINLESS STEEL



## Helps control heat-and parts costs, too

Inserted directly into blast furnace and kiln walls, drilled wells serve as retainers for thermocouples which pass vital operating data along to electronic pyrometers. While heat resistance is fundamental in the choice of Republic ENDURO Stainless Steel for parts such as these, *uniform machinability* ranks equally important . . . wells are turned, threaded, drilled to within  $\frac{1}{2}$ " of their length, chamfered and tapped.

ENDURO Cold Finished Bars consistently improve the percentage of perfect pieces in stainless steel machined parts of all types. And, their *close tolerances, accuracy of section, uniform soundness, fine surface finish and high machinability* allow you to drive unit costs to rock-bottom levels.

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## The Caster That Went Astray

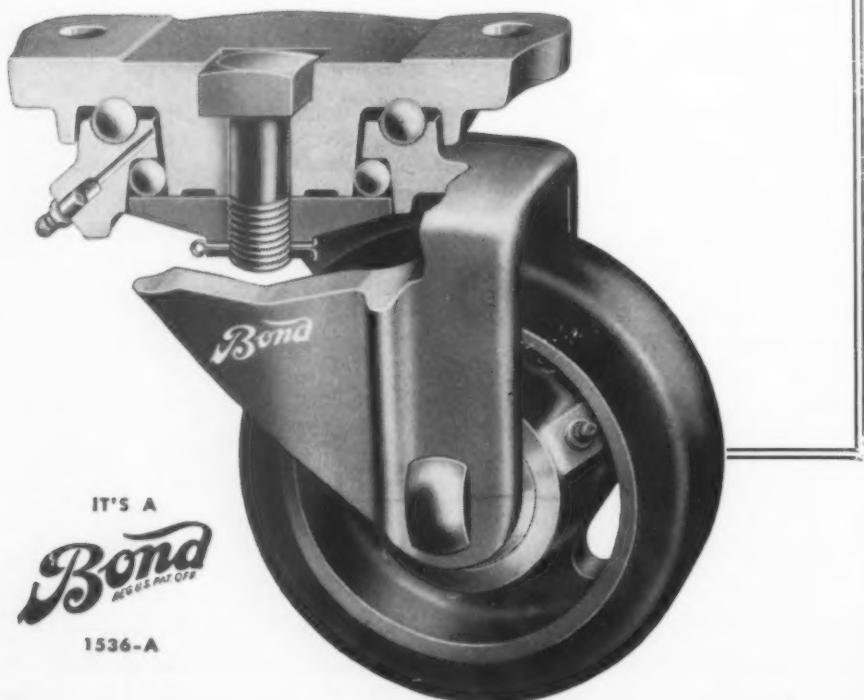
Good men tried to steer it straight—nudging, urging, pushing, forcing—cussing. But it was determined to go off in its own erratic way . . . a path that led it quickly to the scrap heap.

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Get the caster that's exactly right for your operation. Get the free Bond catalog K-38. Sent on request.

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(Continued from page 238)

The first day's program included addresses by the following: W. L. James, Stanolind Oil & Gas Co., Tulsa, Okla.; R. Linn Crockett, American Liberty Oil Co., Dallas, Tex.; D. A. Hulcy, president, Lone Star Gas Company, and president of the Dallas Chamber of Commerce; Ralph Keefer, General Purchasing Agent, Aluminum Company of America, and president of the National Association of Purchasing Agents; Daniel E. Noble, vice-president, Motorola Corp.; Chicago, Ill.; William M. Rooney, News and Market editor of "Steel"; Roy Bacus, WBAP-TV, Fort Worth, Tex.; Harding L. Lawrence, Pioneer Air Lines, Houston; Frank Witten, Southwestern Bell Telephone Co., Dallas; Eric Jonsson, Geophysical Service, Inc., Dallas; John L. Terrell, Magnolia Petroleum Co., Dallas.

Speakers at the second day's session were: Mr. Von Wening; Dr. W. A. Cunningham, University of Texas; George A. Renard, executive secretary-treasurer, N.A.P.A.; William Simon, general counsel, Capehart Trade Policies Committee; Richard Downward, Texas A & M College; Frank John, Mid-Continent Supply Co., Fort Worth; F. W. Littell, Shell Pipe Line Co., Houston; Fran Fendley, Humble Oil & Refining Co., Houston; F. P. Nopper, Gulf Oil Corp., Tulsa.

The annual banquet was held on the evening of the second day of the conference, with Fred D. Bradley, Southern Union Gas Co., Dallas, Clayton Rand, well-known editor and author of Gulfport, Miss., was the principal speaker.

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### T.V.A. OFFICIALS GUESTS AT CHATTANOOGA MEETING

Principal speakers at the regular monthly meeting of the Purchasing Agents Association of Chattanooga on October 12 were A. J. Wagner, Chief of T.V.A.'s Navigation and Transportation Branch, Division of Regional Studies; and William J. Sheehan, T.V.A. Transportation Economist. Their subject was "Adopting River Navigation Freight to the Chattanooga Area".

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### INLAND EMPIRE BRANCH HOLDS FIRST ANNUAL BANQUET

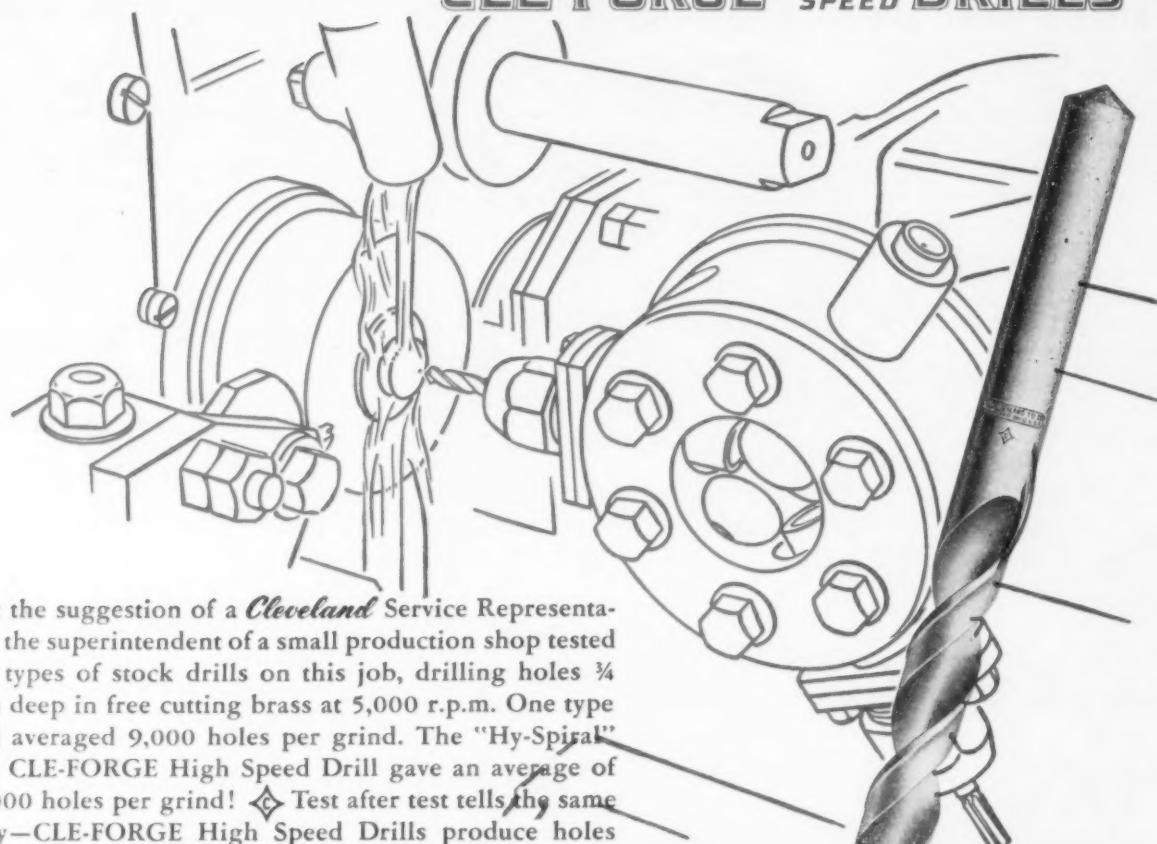
The first annual banquet of the Inland Empire Branch of the Purchasing Agents Association of Washington was held in the Masonic Temple, Spokane, on October 15. More than 500 purchasing agents and salesmen from the Inland Empire, Seattle and Portland attended the affair.

Principal speaker was Dr. Walter W. Isle, President of Eastern Washington College, who spoke on the tremendous burden American business bears in helping to win the "cold war".

Wallace Campbell of Seattle was toastmaster at the banquet. Guests of honor were introduced by I. S. Fetterman, chairman of the Inland Empire branch.

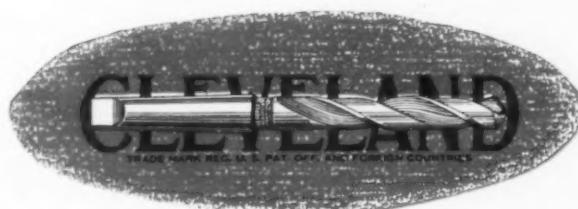
(Please turn to page 244)

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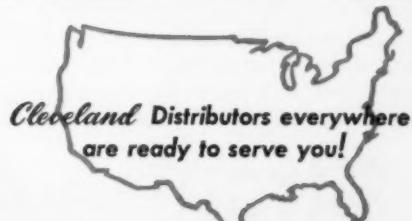
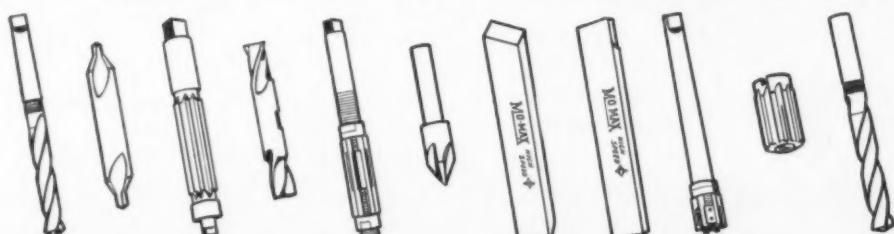
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### "ONCE UPON A TIME" TORONTO MEETING

R. Gordon Harbinson, Union Drawn Steel Co., Hamilton, Ont., was the principal speaker at the November 10 meeting of the Purchasing Agents Association of Toronto, at the Royal York Hotel, his subject being "Once Upon A Time".

The speaker at the October 13th meeting of the Toronto Association was W. E. Cummin, purchasing agent, White Laboratories, Newark, N. J., whose subject was "Low Man on the Totem Pole", largely dealing with the salesman of today as the purchasing agent sees him, in which he emphasized that salesmen, sales managers and purchasing agents can do much to help each other, and warned that purchasing agents should be prepared for the dangerous curves ahead else they might be the low man caught with high-priced inventories. Eighteen new members were introduced at the October meeting.

The Toronto Association is proud of the fact that of the 543 registrants at the recent District Conference in Montreal, 143 were from Toronto. The association will hold its annual Christmas party at the Royal York Hotel on December 10—dinner, entertainment and dancing.

### PANEL ON CURRENT QUESTIONS GEORGIA ASSOCIATION

The November 19th meeting of the Purchasing Agents Association of Georgia, held in Brittain Dining Hall, Georgia Tech, was devoted to a panel discussion of questions submitted by members on prices, deliveries, educational program for purchasing agents, and various other subjects. The panel consisted of R. N. Patrick, H. P. Williamson, M. C. Yarbrough, W. Lane Crocker, Roy W. Pitts, Ernest P. Bickers and Charles W. Hayes. The Social and Entertainment Committee reported on plans for the annual Christmas party which is to be held December 17. The association's first educational program meeting, under the direction of Charlie Hayes, was held on November 17.

### VALLEY ASSOCIATION HEARS "PURCHASING CONTROL" TALK

Meeting at the Youngstown Club, Youngstown, O., on October 26, members of the Valley Purchasing Agents Association heard a talk by A. M. Kennedy, of the meter and instrument division of the Westinghouse Electric Corp., Newark, N. J. Mr. Kennedy, whose subject was "Purchasing Control", stressed the responsibility of purchasing agents in connection with stores.

Prior to the meeting, Andrew Grabik of the Brainard Steel Division, chairman of the education committee, led an open forum on "Purchasing Procedure".

Members of the Purchasing Agents Association of Akron were guests at a meeting held on November 9. Ralph Keefer, president, and Lee Clayton, district vice-president of the N.A.P.A. were present and addressed the meeting.

(Please turn to page 246)

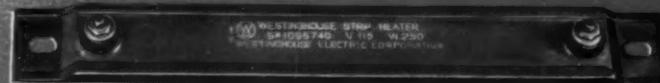
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**TORONTO ASSOCIATION SPONSORS  
EDUCATIONAL COURSE**

Sponsored by the Purchasing Agents Association of Toronto, the University of Toronto Extension Courses, is giving a series of ten lectures for purchasing agents and their assistants, under the direction of George Harrap. The opening lecture on October 19th was attended by 250 men and women, and a large number were turned away. Several buyers came from points as far distant as Hamilton and St. Catharines. Because of the eminent success of the courses, the University has stated that it will repeat the course next Spring, if that is the wish of the association. As a means for maintaining interest, the Toronto Association has offered prizes for compositions on the five subjects included in the course, the schedule of which is as follows:

October 19, Tariffs, C. Godfred Sherwin, The Grinnell Company of Canada.

October 26, Tariffs, G. Blake, M.A., Department of Political Economy, University of Toronto.

November 2, Transportation, Fred. A. Wathorne, Scythes & Co., Ltd., Toronto.

November 9, Transportation, Prof. A. W. Currie, B.A., D.Com.Sc., Department of Political Economy, University of Toronto.

November 16, Business Law, David Vaneck, B.A., School of Law, University of Toronto.

November 23, Business Law, David Vaneck, B.A., School of Law, University of Toronto.

November 30, Economics, G. Blake, M.A., Department of Political Economy, University of Toronto.

December 7, Economics, G. Blake, M.A., Department of Political Economy, University of Toronto.

December 14, Psychology, Prof. K. S. Bernhardt, M.A., Ph.D., Department of Psychology, University of Toronto.

December 21, Psychology, Prof. K. S. Bernhardt, M.A., Ph.D., Department of Psychology, University of Toronto.

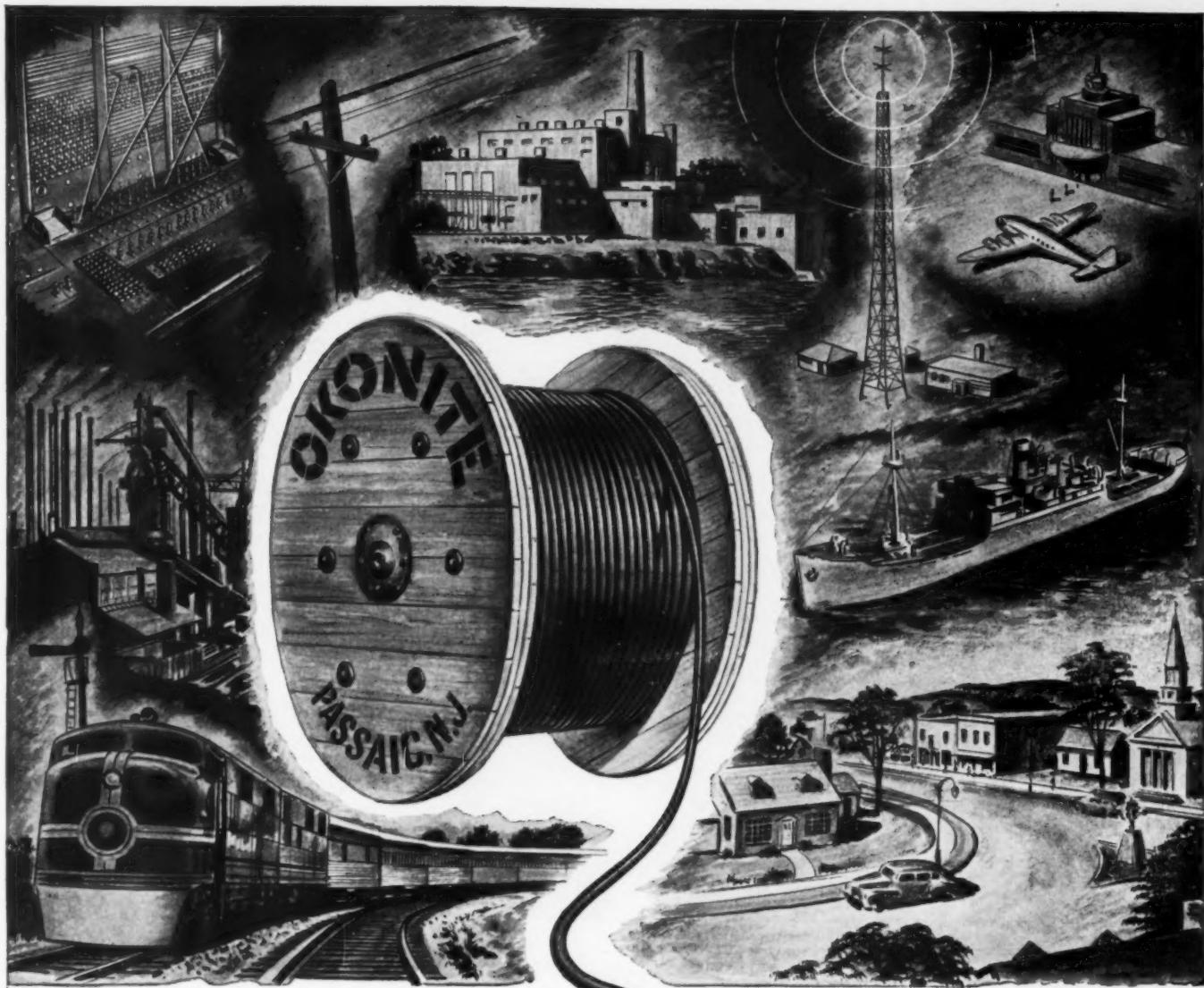
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**PURCHASING COURSE GIVEN AT  
UNIVERSITY OF KANSAS**

The Extension Division of the University of Kansas, in cooperation with the purchasing Agents Association of Kansas City, is conducting its third annual course in Industrial Purchasing, consisting of twelve weekly sessions held at the Hotel Continental, Kansas City, on Tuesday evenings from November 16th through February 22nd. The general plan is to present qualified guest speakers on specific phases of the subject at each session, coordinated by a permanent instructor or discussion leader in charge of the class. Jim Rumsey, Purchasing Agent of the Columbian Steel Tank Company, Kansas City, is the coordinator for the present series. The text book for the course is "Purchasing", by S. F. Heinritz. The schedule of meetings and topics is as follows:

November 16. The Purchasing Function and Management. L. E. Woolley, pur-

(Please turn to page 248)



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*I*n today's many-sided industrial picture . . . with today's installation costs, only the longest-lived wires and cables are economical. Okonite wires and cables, built to stand up better and longer, offset high installation costs.

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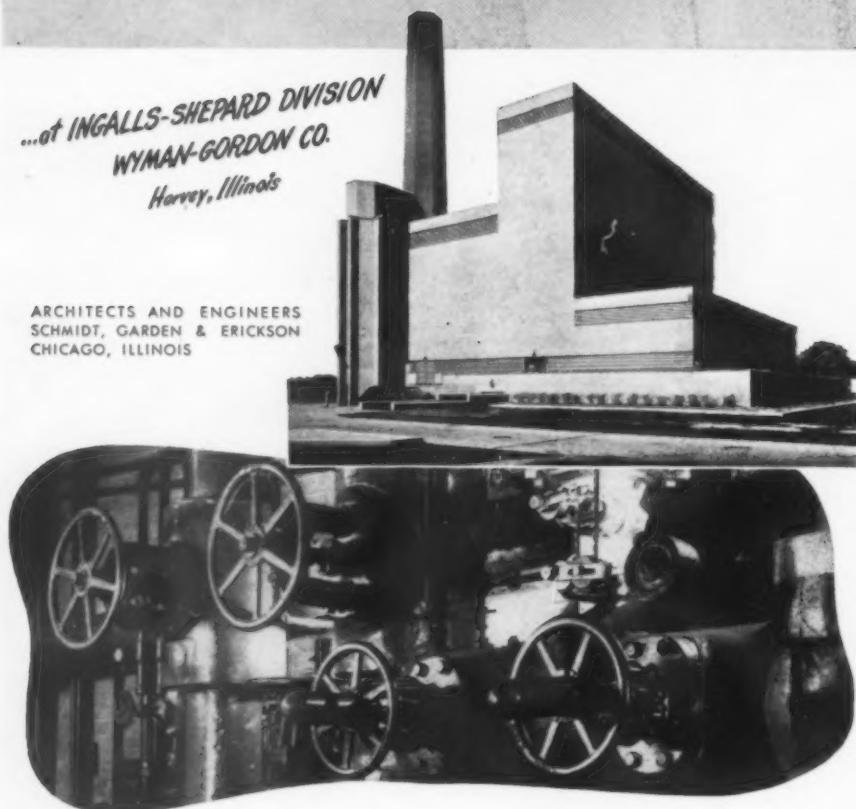
In addition to a-c tests, Okonite subjects its cable to high voltage d-c tests more severe than used by any other cable manufacturer. Long time heat runs prove the stability of Okonite insulations. And these tests are checked not only by the accelerated-aging oxygen bomb, but by the slow, sure, year-after-year weather exposures made in Okonite's proving ground — a permanent outdoor cable laboratory. For detailed descriptions of Okonite "musts," write for your copy of illustrated 32-page Research Bulletin PG 101. The Okonite Company, Passaic, New Jersey.

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(Continued from page 246)

chasing instructor at the School of Business, University of Kansas, Lawrence, Kansas.

November 23. Departmental Organization. Arthur G. Pearson, director of procurement, American Meat Institute, Chicago, Ill.

November 30. Buying the Right Quality and Quality Control. A. W. Sturges, vice president and director of purchases, Gleaner Harvester Corp., Independence, Mo.

December 7. Buying at the Right Price and Speculative Purchasing. Roy Ashmen, associate professor of marketing, School of Business, University of Kansas, Lawrence, Kansas.

December 14. Selecting Sources of Supply and Relationship with Suppliers. H. F. Kirkpatrick, vice president, Marsh Steel Corp., North Kansas City, Mo.

December 21. Need and the Authority to Purchase. R. A. Graves, purchasing agent, Kansas City Power & Light Co., Kansas City, Mo.

January 18. Mechanics of Purchasing. H. L. Kenagy, purchasing agent, Sheffield Steel Corp., Kansas City, Mo.

January 25. Legal Aspects of Purchasing and Contract Cancellations. John B. Gage attorney at law, former mayor of Kansas City, Mo.

February 1. Purchasing Department Manuals and Research. Guest speaker to be announced.

February 8. Purchasing Budgets. Joseph Biery, associate professor of economics, School of Business, University of Kansas, Lawrence, Kansas.

February 15. The Purchasing Program. Fulton Monsees, assistant secretary and purchasing agent, Standard Steel Works, North Kansas City, Mo.

February 22. (Dinner meeting) Purchasing Department Reports and Measuring Purchasing Performance. Arthur G. Pearson, director of procurement, American Meat Institute, Chicago, Ill.



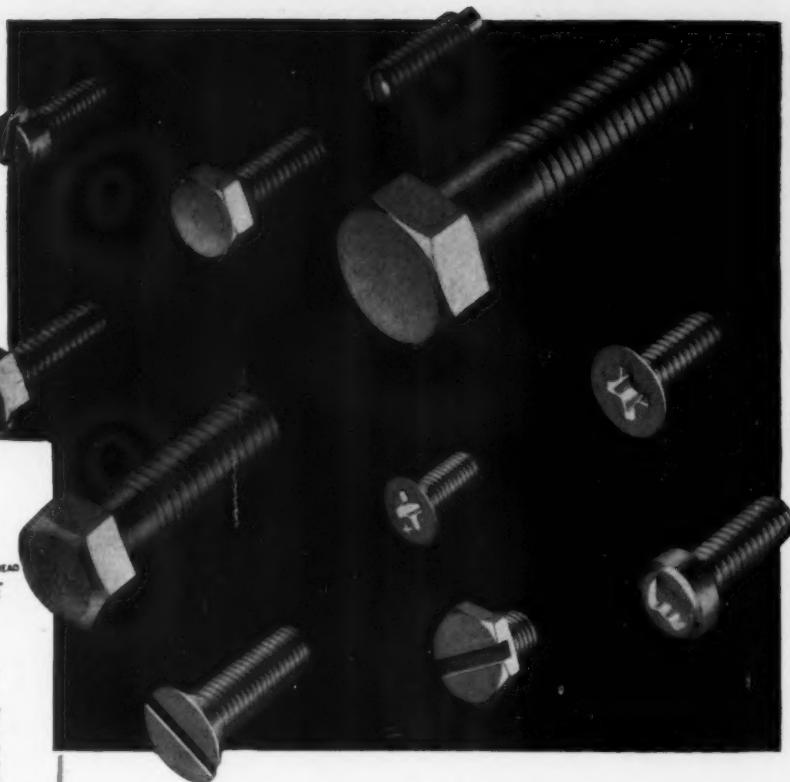
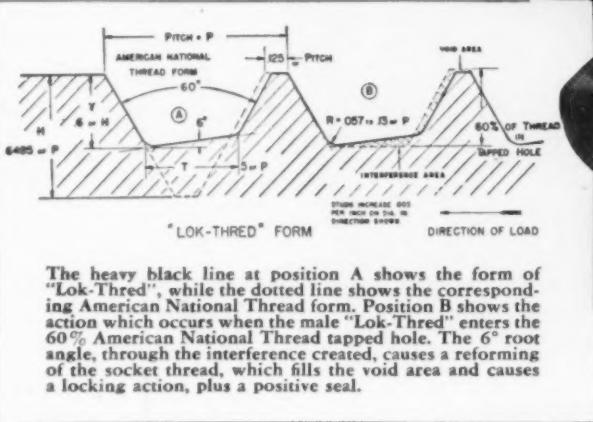
## ALABAMA ASSOCIATION HAS ACTIVE PROGRAM

Recent meetings of the Purchasing Agents Association of Alabama include that held on Thursday, October 14 in the Thomas Jefferson Hotel, and the October 28th meeting at the same place. Dr. Russell S. Poor, dean of the graduate school of Alabama Polytechnic Institute, guest speaker at the first meeting, told the group that the school has made definite progress in finding a substitute for quartz. At the October 28th meeting, members reported on highlights of the leading talks at the recent district conference held in New Orleans.

The first plant visitation of the new year was held at the Pullman-Standard Car & Mfg. Company, Bessemer, Ala., on November 9. The group first stopped at Long-Lewis Hardware Company, Bessemer, and then walked to "Zeigler's" for a buffet lunch, as guests of the two companies.

(Please turn to page 250)

# the only thread that OF ITSELF holds tight



## OFFERS AN IMPORTANT NEW TYPE OF BOLTS AND SCREWS

"Lok-Thred" fasteners actually become tighter in service, even under vibration. They are available now in bolts and screws as well as studs, and with special or standard heads.

They not only lock more securely than American National Threads (see diagram), but also seal positively, even against liquids under pressure. Bosses and blind tapping can be eliminated.



## IN "LOK-THRED", NATIONAL SCREW

### Note These Important "Lok-Thred" Advantages

1. Lock securely and become tighter in service.
2. Have much higher fatigue limits than fasteners with conventional threads.
3. Stronger in both tension and torsion than ordinary American National Threads.
4. Carry entire normal working load on 6° angle at root of thread under high compressive prestress.
5. Modified American National Threads permit use of standard tools.
6. Re-usable and on any re-application less than one-half additional turn brings torque back to its original installation value.
7. Do not require selective fits.
8. Do not gall when being driven nor fret in service.
9. Act as dowels and taper pins.
10. Seal positively and eliminate added bosses and blind tapping.

Write for "Lok-Thred" booklet, or send specific information on your fastening problem.



THE NATIONAL SCREW & MFG. COMPANY, CLEVELAND 4, OHIO

# FOR EVERY TRANSMISSION

NEED

80,000 TYPES OF

## CULLMAN SPROCKETS

Write for your copy.  
This booklet offers  
valuable facts for  
buyers—on 80,000  
types of Cullman  
Sprockets.

Top efficiency is assured by Cullman's long experience and fast, low-cost, high-precision methods. There's a stock design or "special" for every need—made the exclusive Cullman way with specialized equipment.

**CULLMAN WHEEL COMPANY**

1352 P Altgeld Street

Chicago 14, Illinois



- 1—#5 Magnus Aja-Dip Mach.
- 2—#5 Magnus Hot Dip Tank.
- 3—#5 Magnus Hot Dip Tank.
- 4—#5 Magnus Hot Dip Tank.
- 5—#5 Magnus Hot Dip Tank.
- 6—#3 Magnus Dryer.

Magnus Machines and  
Cleaners Can Do a Comparable Job for You.

Tell us what your cleaning jobs and the volumes involved are, so that we can recommend suitable Magnus cleaners and machines.

THIS Magnus installation replaced vapor degreasing and hand wiping with solvents in the cleaning department of a large eastern manufacturer of wrenches, hammers, shears, etc. The job is the removal of oil and drawing compounds from components, prior to heat treating and/or finishing.

They get 10 times their former production with better cleaned parts, without hand work, and without unpleasant, hazardous fumes. They save at least 50% in materials and labor, using Magnus 94 XX as the cleaner.

**MAGNUS CHEMICAL COMPANY**

93 South Ave., Garwood, N. J.

In Canada—Magnus Chemicals, Ltd., 4040 Rue Masson, Montreal 36, Que.  
Service representatives in principal cities



IN METAL CLEANING IT'S  
**MAGNUS**  
CLEANERS • EQUIPMENT • METHODS

### PACIFIC NORTHWEST PRICE PROSPECTS—SEATTLE, WASH.

The November monthly educational meeting of the Purchasing Agents Association of Washington, Seattle, Wash., was devoted to discussion of "Price Prospects" on six different types of commodities as follows:

Metals, Wm. R. Case, sales manager, Seattle Steel Co.;

Lumber and Lumber Products, Neil Bergman, L. R. Lewis Co.;

Building Material, Frank P. Watts, purchasing agent, Pioneer Sand and Gravel Co.;

Foods, Herbert J. Dobb, manager of National Grocery, Schwabacher Bros.;

Machinery and Electrical Equipment, Lloyd Y. Evans, secretary, Star Machinery Co.;

Textiles, W. H. Glorius, assistant general merchandising manager, Sears, Roebuck & Co.;

These presentations were followed by a question period under the direction of A. Gammon, moderator.

### PURCHASING PROCEDURE NEW ORLEANS

"Purchasing Procedure" was the subject of the first "educational discussion", meeting of the Purchasing Agents Association of New Orleans, which was held on November 16th under the direction of the Educational Committee, Tom Born, Chairman. The discussion leaders were A. Jack Clark, purchasing agent, Shell Oil Company, and R. E. Fremd, purchasing agent, Flintkote Company.

### "PURCHASING CONTRACTS AND SALES" OREGON ASSN. TOPIC

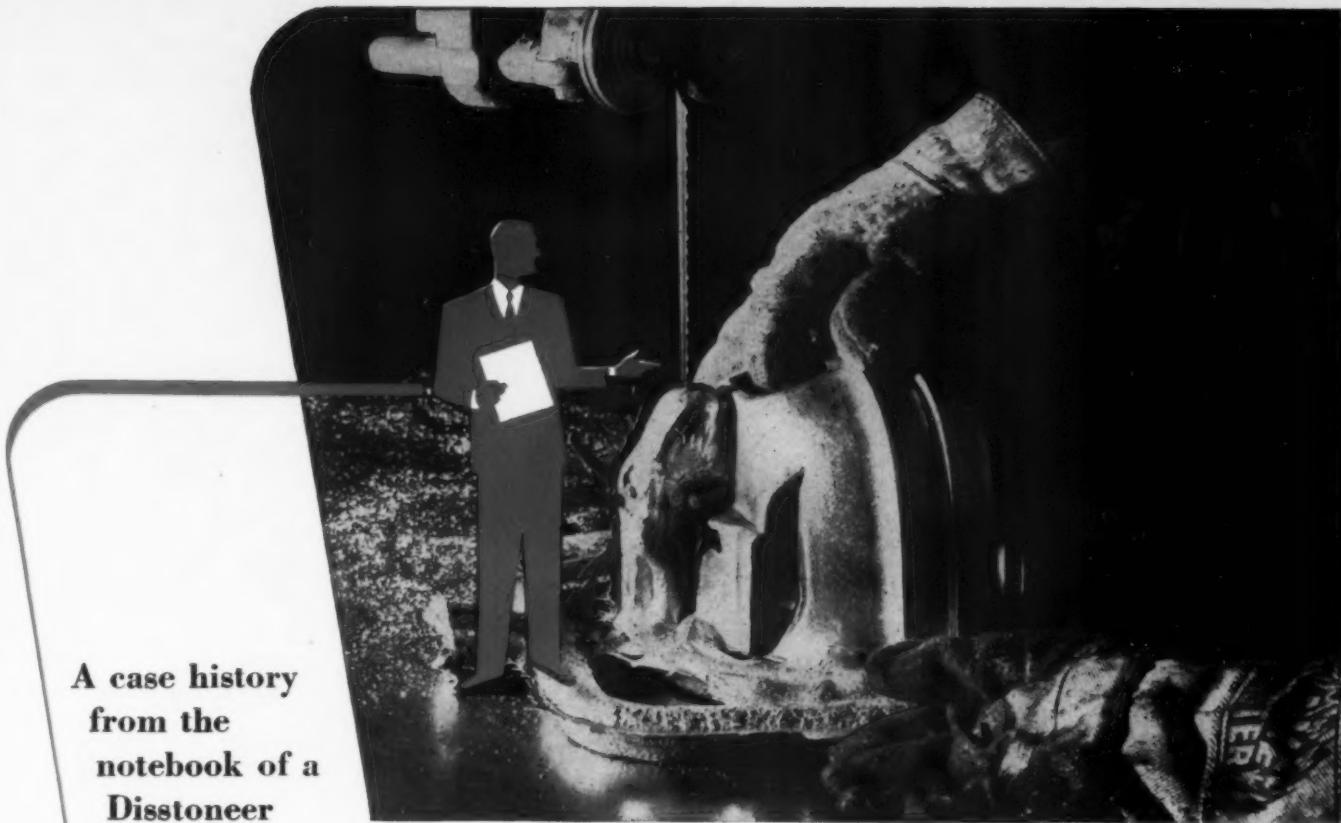
"Read the small print—and never hesitate to change it—before signing those contracts" was the warning issued at the October 18 dinner meeting of the Purchasing Agents Association of Oregon by guest speaker Francis Harrington, Portland attorney.

Mr. Harrington, whose subject was "What The P. A. Should Know About Purchasing Contracts and Sales", particularly criticized a too-prevalent tendency among procurement men to (1) sign contracts embodying printed conditions which would bind their firms to ridiculous, even ruinous, conditions if enforced, and (2) refrain from insisting on alteration or elimination of objectionable or ambiguous contract provisions when these are a printed part of the instrument.

Trade practices probably are a procurement man's greatest contract hazard, unless he knows the common terms of these and understands them completely, the speaker pointed out.

Discussing the uniform sales act, Mr. Harrington urged his hearers to become familiar with all provisions of that statute, and even more important, how the provisions are interpreted in the state in which a sales contract is made.

(Please turn to page 252)



**A case history  
from the  
notebook of a  
Dissteeoneer**

Disston Hard Edge Flexible Back Band Saw (Buttress Tooth Pattern)  
cutting aluminum alloy castings in plant of a California foundry.

## How a DISSTEEONEER helped save 2½ to 3 hours per day on a metal-cutting band saw job . . .

### He may be able to do as much for you

This foundry was cutting aluminum alloy castings, used for the cap ends of cylinder type vacuum cleaners. The pieces cut are 8" in circumference and ½" thick (one gate runs 4" high and 1" thick).

A buttress tooth band saw blade, 18' x ½" x 4T, was being used. Blades were not clearing on the contour cutting, thus causing them to lead off and spoil castings. Also, blades were wearing out too fast. The company was getting little more than 15 castings per blade.

The Dissteeoneer recommended a Disston Buttress Tooth Pattern Flexback blade, 18' x ¾" x 4T . . . only a slight change, but what a difference in results! The number of castings per blade was increased to 50. But, of even greater importance than saving blade-costs and reducing down time, production was speeded up to a point where 2½ to 3 hours per day were saved.

After the trouble was eliminated, the Dissteeoneer was told, "I knew you could help me, that's why I called you. I'm very well pleased with the change, and quite happy."

Like this foundry, and hundreds of other manufacturers who have profited from Dissteeoneer service, you, too, will be "very well pleased" with the savings he can make for you. He will be glad to call at your convenience and without charge or obligation.

*Write for full particulars, or get in touch with your local Disston Distributor*

### DISSTON BUTTRESS TOOTH PATTERN HARD EDGE FLEXIBLE BACK BAND SAW

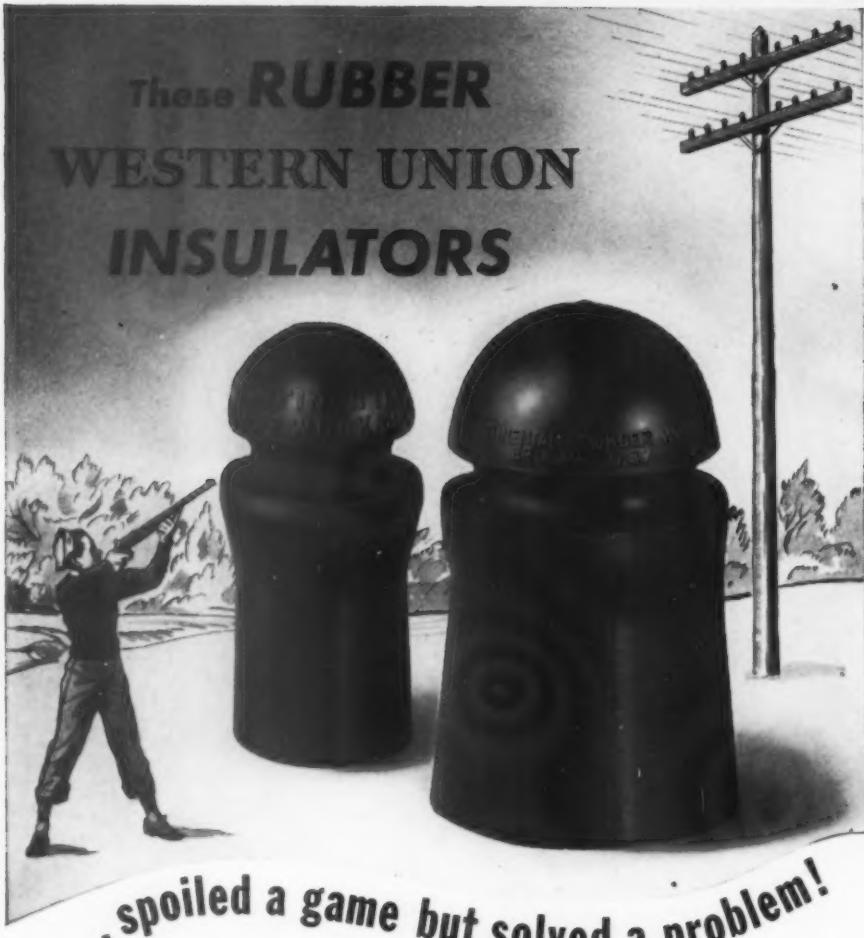
Designed for machines operating at speeds of 3000 fpm or over. Wide tooth spacing allows faster feed as wider gullet provides greater chip clearance. Recommended for magnesium and aluminum alloys.

WHEN YOU BUY A  
DISSTON PRODUCT YOU

BUY  
**DISSTON**  
STEEL  
SKILL  
and  
SERVICE



**HENRY DISSTON & SONS, INC., 1233 Tacony, Philadelphia 35, Pa., U.S.A.**



*...spoiled a game but solved a problem!*

The game of "pot-shooting" low tension line glass insulators has long been one of boyhood's greatest sports -- but it costs communication companies a big annual bill. To eliminate this costly breakage, Western Union engineers designed a rubber insulator and then had the problem of getting it made.

Continental provided the answer by developing the one compound that rigorous laboratory and field tests proved capable of doing the job. This rubber insulator withstands the effects of rain, snow, sun, heat and freezing temperatures and actually surpasses glass in electrical resistivity during wet weather. Linemen report that resilience of rubber insulators reduces abrasion and consequent wire breakage where strong winds are encountered.

The success of this development is another example of the specialized assistance in rubber which Continental offers to design and production engineers.

**You'll Be Glad to Have This Booklet.**

Based on actual case histories, it shows how much can be gained by working with rubber specialists -- write for your copy now.



**CONTINENTAL  
RUBBER WORKS**

1903 LIBERTY AVENUE • ERIE, PENNSYLVANIA

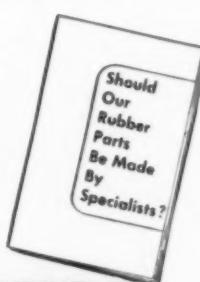
**BRANCHES**

Baltimore, Md.  
Boston, Mass.  
Buffalo, N.Y.  
Chicago, Ill.  
Cincinnati, Ohio  
Cleveland, Ohio

Dayton, Ohio  
Detroit, Mich.  
Hartford, Conn.  
Indianapolis, Ind.  
Kansas City, Mo.  
Lancaster, S.C.

Los Angeles, Calif.  
Lutz, Fla.  
Memphis, Tenn.  
Milwaukee, Wis.  
New York, N.Y.  
Philadelphia, Pa.

Pittsburgh, Pa.  
Richmond, Va.  
Rochester, N.Y.  
St. Louis, Mo.  
San Francisco, Calif.  
Syracuse, N.Y.



**CHAPLAIN GUEST SPEAKER AT HAMILTON DISTRICT MEETING**

A regular meeting of the Purchasing Agents Association of Hamilton District was held recently in the Kerby House, Brantford. Guest speaker was Major The Reverend G. Deane Johnston, M.B.E., on the topic, "Have You Overlooked Something?" A plant visit was held in the afternoon at the Cockshutt Plow Company.

◆ ◆ ◆  
**BARNETT HEADS NEW YORK STEAMSHIP P. A.'S GROUP**

Roy I. Barnett, Purchasing Agent of Black Diamond Steamship Corporation has been elected chairman of the American Steamship Purchasing Agents Group affiliated with the Purchasing Agents Association of New York. He succeeds Francis C. Gannon of Tankers Company, who will continue as a member of the executive committee.



Roy I. Barnett

Charles J. Ogg of Marine Transport Lines, Inc., was named vice-chairman. Other executive members elected are: Bruce W. Freining, Prudential Steamship Corporation and David W. Justice, Smith-Johnson Steamship Corporation.

The group comprises forty steamship companies which own or operate the greater bulk of the American Merchant fleet.

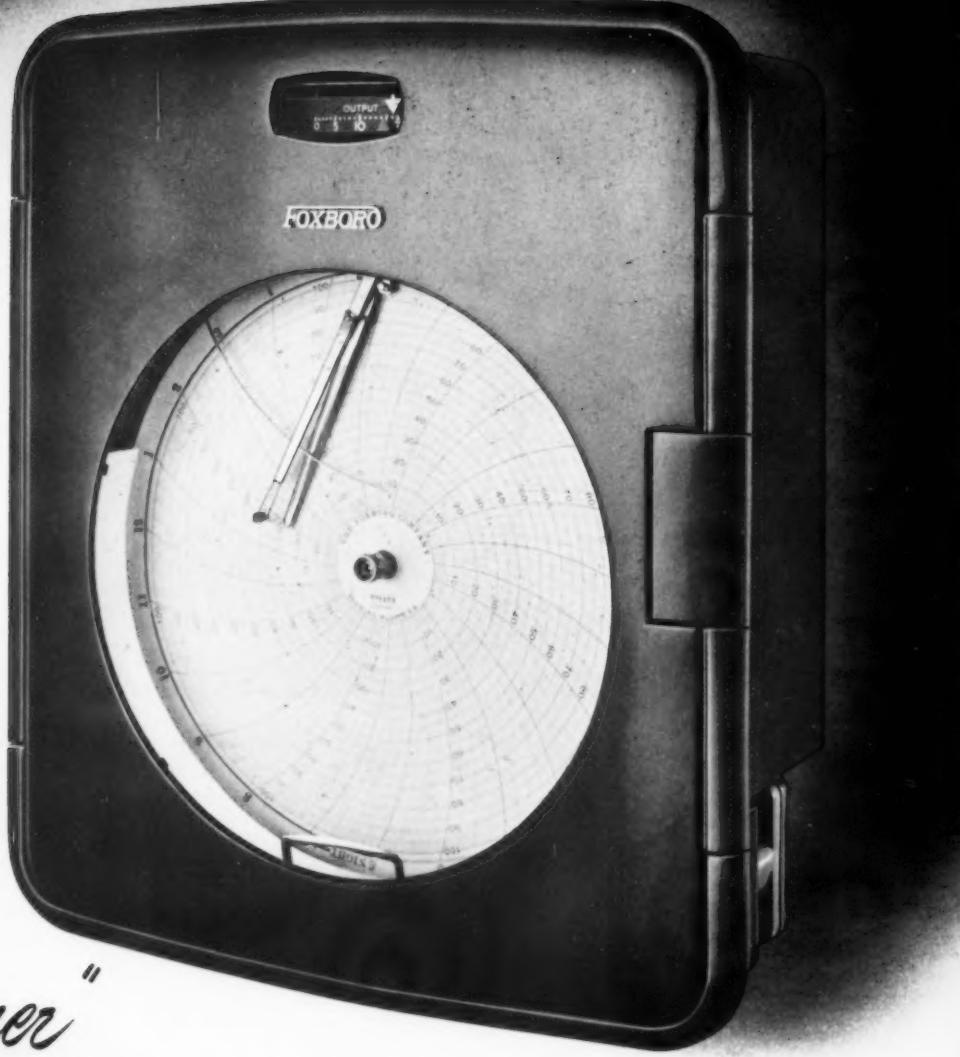
◆ ◆ ◆  
**N.W. PENNSYLVANIA ASSN. HAS VISUAL EDUCATION MEETING**

The November 11 meeting of the Purchasing Agents Association of Northwestern Pennsylvania was devoted to a visual education program directed by C. H. Holden and P. L. Gedeon. The meeting was held in the Emery Hotel, Bradford, Pa. Subject of the program was "The Building of a Tire".

The following dates and locations of future meetings have been announced: December 10--Titusville; January 13--Warren; February 10--Warren; March 10--Jamestown; April 14--Oil City; May 12--Corry; June 9--Bradford.

Committee appointments for 1948-49 are: Membership--Ray Henry, Orin E. Crandall, W. R. Loveland, Milford Adams, H. G. Hester, E. C. Walker; Program and Publicity--G. A. Carlson and L. M. Danner; Education--C. H. Holden, and P. L. Gedeon.

(Please turn to page 256)



*An "Eye Opener"*

## IN SIMPLICITY

**UNPRECEDENTED SIMPLICITY** of design—construction—operation—maintenance . . . these are the results of building Foxboro's Model 40 Controller new from the ground up! And these are features that open the eyes of instrument men to new values available in industrial controllers.

**FOR EXAMPLE**, here is what the simplicity of M-40 did for instrument men of one leading refinery. When their first M-40 Controller was delivered, they took it apart and reassembled it several times . . . without any outside guidance. When put into operation, it functioned perfectly and continued to do so without further adjustment. In no way had the original, accurate alignment of parts been disturbed.

**FOXBORO**  
REG. U. S. PAT. OFF.

**M-40**

"THE FINEST MODERN CONTROLLER"

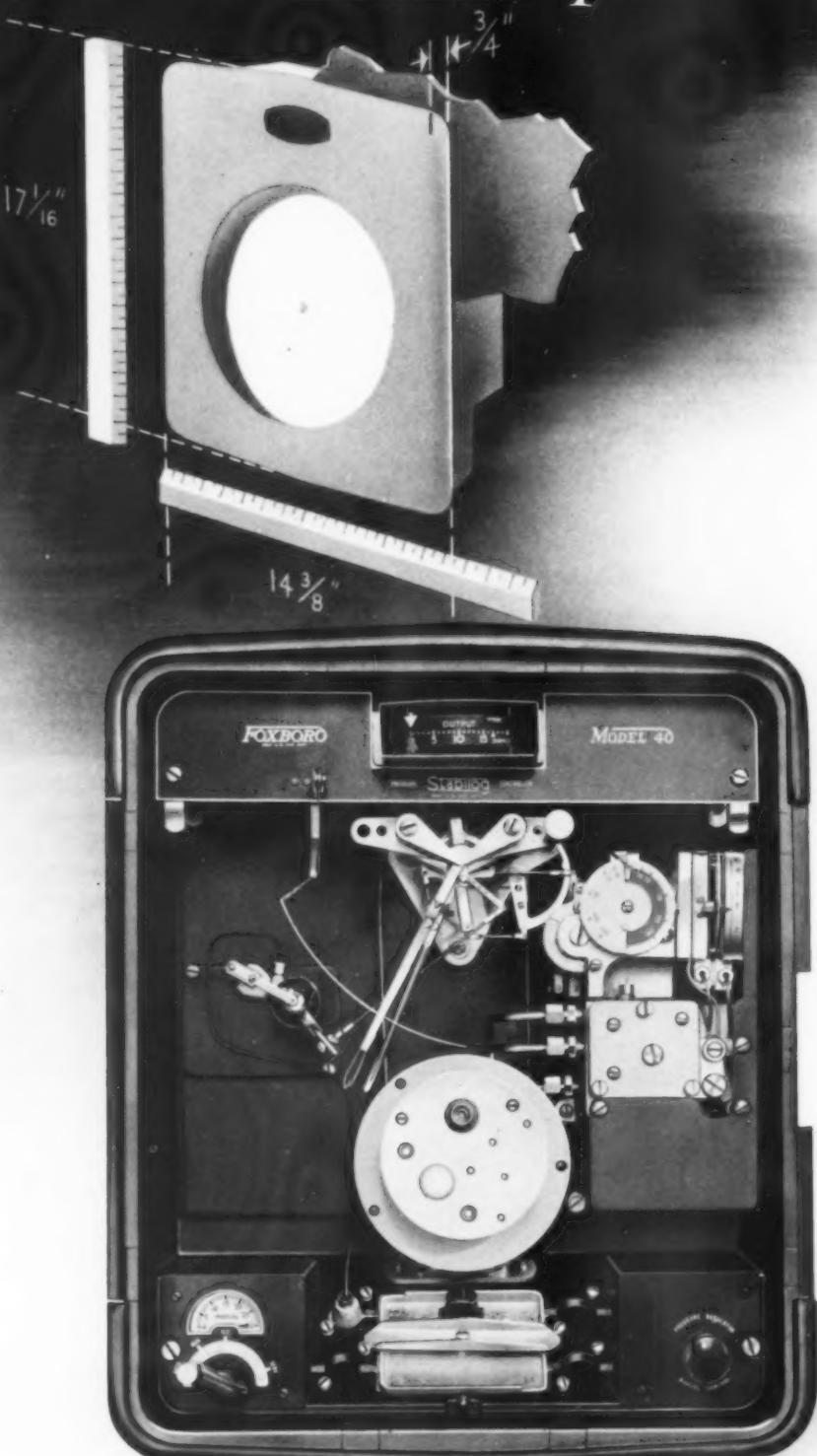


AN "EYE-OPENER" IN COMPACT DESIGN

# No other case offers so much in so little space



The Model 40 Pneumatic Controller is available for temperature, pressure, flow, liquid level, humidity, density, etc., in full range of control actions and combinations. Write for Bulletin 381. **The Foxboro Company, 262 Neponset Avenue, Foxboro, Mass., U. S. A.**



Unlike any other controller of this type, the M-40 is so compactly designed that the detachable manual control unit is contained entirely within the case. The M-40 occupies less space than any other controller . . . saving one-third or more panel area. What's more, the case extends outward from the board less than any other controller and is entirely free from protrusions. The latch is flush; the hinges, invisible. Despite its smaller size, the M-40 case easily accommodates four complete units such as two measuring elements and two controllers.

This outstanding compactness is one more feature that makes M-40 the finest modern controller.

**FOXBORO**  
REG. U. S. PAT. OFF.

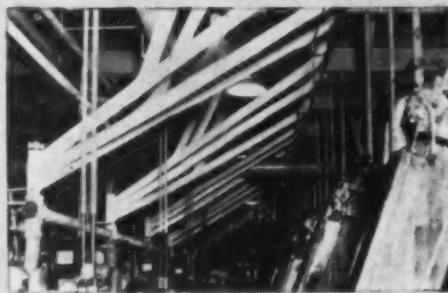
**M-40**

"THE FINEST MODERN CONTROLLER"

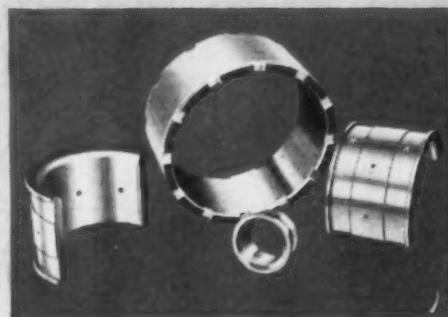
# Tubes... for all purposes from one dependable source



... FOR POWER PLANTS



... FOR PRODUCTION PROCESSES



... FOR MECHANICAL PARTS

TA-1433M



Seamless and Welded Tubular Products in a full range of Carbon, Alloy, and Stainless Steels for All Pressure and Mechanical Applications.

★ ★ ★

Other B&W Products

THE BABCOCK & WILCOX CO.  
85 LIBERTY STREET · NEW YORK 6, N.Y.

Stationary and Marine Boilers . . . Boiler Components . . .  
Pulverizers . . . Fuel Burning Equipment . . . Refractories . . .  
Chemical Recovery Units . . . Process Equipment . . .  
Alloy Castings.



B & W MAKES BOTH

B&W is the one place you can get both Seamless and Welded steel tubes for any requirement in power plants, production processes, or for mechanical uses. B&W Tubes cover the widest variety of analyses available from a single source—from low carbons to high alloys, including a full range of stainless steels of the ferritic and austenitic groups; carbon-molybdenum, S.A.E. and Nitralloy steels, and Croloy grades developed by B&W. By centralizing your tube requirements for all purposes at B&W you simplify tube engineering and purchasing problems. In many cases, authorized distributors in all principal cities can fill your orders promptly from local warehouse stocks of B&W tubes.

**BABCOCK  
& WILCOX**  
SEAMLESS  
& WELDED TUBES

THE BABCOCK & WILCOX TUBE COMPANY  
GENERAL OFFICES: BEAVER FALLS, PA.  
PLANTS: BEAVER FALLS, PA. AND ALLIANCE, OHIO.

# IS OLD-FASHIONED TACKING SLOWING DOWN YOUR PRODUCTION?

# Change to **DUO-EAST**

# **AUTOMATIC TACKERS AND WATCH PROFITS GO UP**

**Eliminate the hammer and nail brigade and bring your production up-to-date and actually ahead of schedule — increase your profits with Duo-Fast tackers. Fast—accurate, these tackers can do a complete job easily with one hand. They're excellent for tacking in awkward places.**

There is an automatic Duo-Fast Tacker for every tacking job. All are fully guaranteed as long as genuine Duo-Fast staples are used.



The perfect combination for  
a job well done — Duo-Fast  
Gun and Hammer Tacker  
Team.

**Write today for the Duo-Fast catalog on all Duo-Fast automatic tackers.**

**D-U-O-F-A-S-T**  
FASTENER CORPORATION

887 Fletcher Street

Chicago 14, Illinois

## LOUISVILLE ASSOCIATION HEARS CONFERENCE REPORTS

The Purchasing Agents Association of Louisville held its monthly meeting at the Seelbach Hotel on Tuesday, October 26th, the meeting having been postponed from the previous Tuesday because of the absence of so many members at the District Conference in New Orleans.

Reports on the Conference and the District Council meeting were given by J. T. Kinberger, National Director, and E. E. McCulley, Louisville member of the District Activities Committee.

The program was in charge of Harry L. Moran, chairman of the Educational Committee for the Louisville Association and the members of his committee. Three subjects of interest to Purchasing Agents were discussed, with one member giving the affirmative and one member the negative on each question. A moving picture was also shown. The consensus of those in attendance was that the meeting was one of the finest the Louisville Association has ever had. A vote was taken on the preferences of the members with regard to hotels, and an overwhelming majority voted to change the place of meeting from the Kentucky Hotel to the Seelbach Hotel. As a result, future meetings of the Association and of the directors will be held at the latter hotel.

**"HOW TO ORDER STEEL"**  
**TOPIC AT DAYTON ASSN. MEETING**

The Purchasing Agents Association of Dayton held a joint meeting with the American Society of Metals at Sacksteder's Inn on October 6, at which J. G. Wickoff, Armco Steel Corporation spoke on the subject, "How To Order Steel". Mr. Wickoff, who has been with Armco for the past 22 years in mill operations, sales, and the order department, pointed out that in these days of extreme shortage it pays to "mean what we say and say what we mean" when buying steel.

and say what we mean when buying steel.

On the regular meeting night, October 14, the program committee under R. O. Long and President E. G. Sander arranged an old-time get-together at the Idle Hour. The association has a total of 14 new members for the year, many of whom had not been previously introduced to all the members, and they all became better acquainted. The affair featured a chicken dinner served country-style, door prizes, refreshment, entertainment and game.

**EASTERN NEW YORK ASSN.  
PLANS CHRISTMAS PARTY**

The fifth annual Christmas Party of the Purchasing Agents Association of Eastern New York will be held at Wolfer's Roost, Albany, N. Y., on December 9.

Cocktails will be served from 6:30 to 7:30, followed by dinner. Dancing will begin at 9 o'clock. Tickets for members are priced at \$10.00 per couple, and \$12.00 per couple for guests.

(Please turn to page 258)

# NOW!

## Rounding out the line of



*wheeler*  
"SKILLED LIGHTING"

## ...New SLIMLINE Fluorescent Fixtures

### INDUSTRIAL UNITS

End view of industrial type unit showing flat top. These units are designed for general industrial use under normal atmospheric conditions.

### TEXTILE UNITS

End view of textile mill unit showing peaked top especially designed to eliminate frequent cleanings and to offer outstanding protection against humidity.

**THIS SMART-LOOKING SLIMLINE** fixture offers you more than just sleek beauty . . . it also offers a genuine "Skilled Lighting" unit for use with the new high efficiency SLIMLINE Lamps. Assures extra long service life with minimum maintenance.

Typical of Wheeler engineering thoroughness is the exclusive auxiliary lamp support at center of the fixture to prevent vibration of the 8 foot lamps. Fixture channel is in one piece . . . available in either baked enamel or Wheeler triple-guarded vitreous porcelain enamel finish. Reflectors are furnished in vitreous porcelain enamel finish only.

### TWO TYPES:

#### INDUSTRIAL-TEXTILE

The new Wheeler SLIMLINE is made for regular industrial applica-

tion or for textile mill application. Textile mill units have peaked channels to prevent accumulation of fly, lint, dust and moisture.

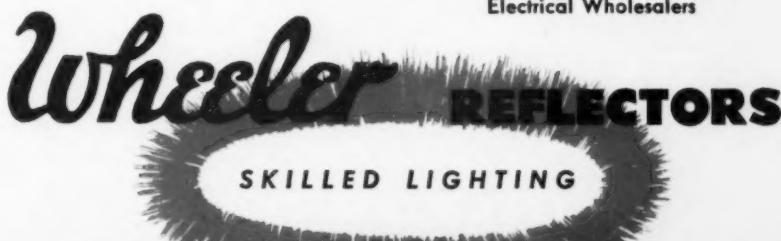
#### HIGHEST EFFICIENCY

SLIMLINE lamps operate at the highest efficiency of any lamps. They start instantly . . . no special ballasts needed. If increased intensity is desired, 300 MA ballast is available to replace 200 MA ballast using same lamps.

#### EASIEST TO HANDLE

SLIMLINE fixtures have only 2 sockets . . . lamps have only 1 terminal pin in each end. Only two 8 foot lamps for a double-length fixture. Get all the facts on the extra value of these new SLIMLINE Units. Write to Wheeler Reflector Company, 275 Congress St., Boston 10, Massachusetts.

Distributed Exclusively Through  
Electrical Wholesalers



*wheeler*  
**REFLECTORS**  
SKILLED LIGHTING

MADE BY SPECIALISTS IN LIGHTING EQUIPMENT SINCE 1881

"EFFECTIVE CORRESPONDENCE"  
TOPIC AT M.P.A.C. MEETING

Edward N. Mayer, Jr., president of James Gray, Inc., New York City and noted authority on direct mail, was the guest speaker at the regular meeting of the Metropolitan Purchasers Assistants Club, held in the Midtown House, New York, on November 9. A sound color film "Land of the Maharanahs" was shown through the courtesy of the Esso Standard Oil Company.

In his address, Mr. Gray emphasized that getting a man's attention was the first thing to concentrate on in writing a letter. "Then you must create a desire in order to get some kind of definite action", he added. "When you have done that you have written a letter". He said we never write a letter unless we want something.

Laying down the principle that every letter must sell something, Mr. Gray said the following rules should be kept in mind as supporting that principle:

1. Know your subject thoroughly.
2. Know what you want and ask for it.
3. Use simple language. Eliminate useless words and long, involved phrases. Use the same kind of language you use when you are talking to a person.
4. Make your letter clear. Make it so clear that "even you know what you are talking about".
5. Make your letter concise. A five page letter that tells the whole story is a short letter. A three-paragraph letter that tells more than the whole story is too long.
6. Make your letter friendly.
7. Make your letter tactful. There are two ways to say everything. It makes a lot of difference how you say it.
8. Make your letter sincere.
9. Always put a "hook" in your letter—that is, something that will make the person who gets it take action.

TOOL ENGINEERING  
CENTRAL NEW YORK MEETING

George Beirman, assistant chief tool engineer, Easy Washing Machine Corp., Syracuse, N. Y., led a discussion on Tool Engineering at the November meeting of the Purchasing Agents Association of Syracuse and Central New York at the Onondaga Hotel, Syracuse, N. Y., November 17th.

"SUPPLIERS ARE WAKING UP—  
ARE YOU?" ROCHESTER TOPIC

An unusual sound motion picture entitled "Suppliers Are Waking Up—Are You?" was shown at the regular dinner meeting of the Rochester Association of Industrial Buyers, held at the Normandie Hotel on November 10.

The picture, which dealt with sensational new ideas in the field of packaging was presented by Hubbs and Hastings Paper Company, in cooperation with the Sherman Paper Products Corp. George Beale, Sherman packaging engineer, discussed the new developments portrayed.

(Please turn to page 260)

A black and white photograph showing a large spool of wire and a smaller roll of wire. A small tag is attached to the spool, which has printed text on it. To the right of the spool is a text box containing promotional text.

**With an unfailing supply  
of premium steel,  
JOHNSON nationwide,  
streamlined service on  
high-quality specialty steel  
wires is in high gear....  
and with it JOHNSON  
unexcelled quality.  
Laboratory supervision  
from mine to finished  
product.**

**There is a Johnson  
office near you, and  
warehouse stocks in  
Worcester, Chicago  
and Los Angeles.**

**JOHNSON**  
STEEL AND WIRE COMPANY, INC.  
WORCESTER 1, MASS.

New York   Philadelphia   Cleveland   Detroit   Akron   Chicago  
Atlanta   Houston   Tulsa   Los Angeles   Toronto

A black and white photograph of a roll of Safetex Gummed Tape. The tape has a wavy pattern and a label on top. The label reads "SAFETEX GUMMED TAPE" and includes a small graphic of a seal with the text "SEAL IT RIGHT" and "WITH GUMMED TAPE". Below the tape, there is additional text.

**CENTRAL PAPER COMPANY,  
Menasha, Wis.**



## ...The Most Complete Full Color Guidebook on Decal Nameplates Ever Published

Manufacturers! Executives! Meyercord, world's largest producer of decalcomania, offers this brand-new "Mark-It" Manual on Decal Nameplates free. Twenty full-color pages. New Decal developments. New application techniques. Information vital to every business. This handy reference book shows how America's leading products are Decal-marked by Meyercord—to save time labor, material . . . to provide colorful brand recognition . . . permanent product identification with nameplates that sell!

The new "Mark-It" Manual shows hundreds of durable, washable Meyercord Decals. Nameplates, trademarks, instructions, charts, diagrams . . . all sizes, colors, designs. Application is simple at production line speeds on all basic product surfaces, curved or flat—on metal, glass, wood, china, plastics, leather, rubber, crinkle—even on poultry. Tells how and where leading manufacturers use Meyercord Decals, for lasting adhesion despite vibration, acid, fumes, hard use and wear.

### Executives!

**WRITE FOR YOUR COPY TODAY!**

The new Meyercord "Mark-It" Manual on Decal Nameplates is available to all executives, FREE. No obligation. An invaluable handbook. To obtain your copy, simply write on your business letterhead. Please send inquiries to Dept. 61-12.

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**The MEYERCORD Co.**  
World's Largest Decal Manufacturer  
5323 W. LAKE ST. CHICAGO 44, ILL.

**ADVERTISE • IDENTIFY • DECORATE • WITH MEYERCORD DECALS**

OUT OUR WAY



## Remember the Name . . . SOL-SPEEDI-DRI!

More SOL-SPEEDI-DRI is used in America's busy shops and plants than any other product of similar nature. Industry has learned that it can count on the unvarying quality of SOL-SPEEDI-DRI . . . the original and foremost absorbent for all liquids. It is this quality that assures you cleaner, brighter, safer floors . . . freedom from slips and falls caused by oil- and grease-soaked surfaces. In addition, SOL-SPEEDI-DRI costs *less* per pound because it does more work . . . because it is always efficient, always dependable.

SOL-SPEEDI-DRI is obtained by selective mining, is laboratory-checked hourly, and is processed by the most modern methods and equipment. It is packed in special moisture-proof bags, assuring maximum absorption at the time of application. Don't take chances . . . say SOL-SPEEDI-DRI, and be safe!

**WHEN YOU BUY, BE SURE IT'S SOL-SPEEDI-DRI!**

**Safety and Maintenance Co., Inc., No. 1 Wall St., New York 5, N.Y.**

Warehouse Stocks Maintained in Principal Cities  
of the United States and Canada

**FREE SAMPLE** FILL OUT THE COUPON  
AND MAIL TODAY FOR BIG, FREE SAMPLE

Name \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_ P-12

**SOL-SPEEDI-DRI**  
ABSORBENT FOR ALL LIQUIDS

UL

## TWIN CITY ASSOCIATION VISITS STEEL TANK PLANT

Members of the Twin City Association of Purchasing Agents made a plant visit on October 13 to the Brown Steel Tank Company, owned by Arthur Brown a former member of the association, and Richard W. Quackenbush. They were guests of Mr. Brown at a cocktail party in the lounge room of the Minneapolis Athletic Club following the visit.

Steel was the chief topic of the discussion that followed the evening meeting. The discussion was led by Max Lorberbaum and Paul Cross.

## "PURCHASING PROBLEMS AND PROCEDURES"—CEN. ONTARIO

The regular monthly meeting of the Purchasing Agents Association of Central Ontario was held on Tuesday, October 26, at the Grand River Tea Room, Freeport, Ontario.

Glad Zimmerman, Harold Lachman and Norm Zinn each gave a brief talk on the subject "Purchasing Problems and Procedures" and answered questions in the discussion period that followed. The program was arranged by Albert Brubacher, educational chairman.

## NEW YORK LAUNCHES COURSE ON HOW TO BUY STEEL

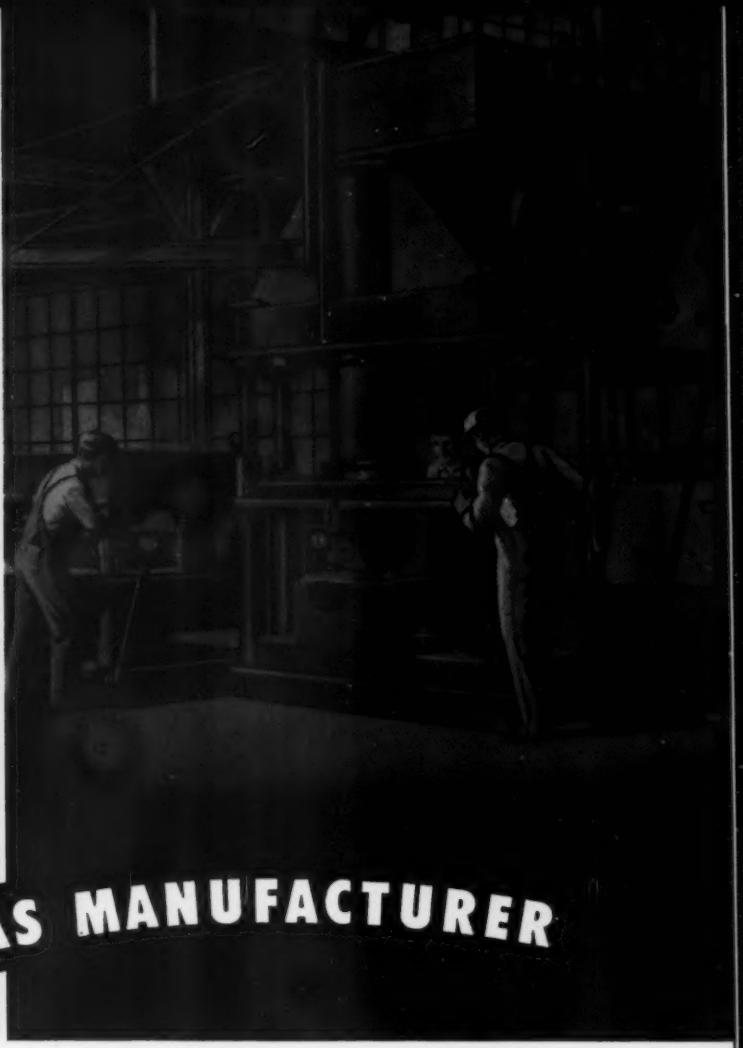
President Donald H. Lyons of the Purchasing Agents Association of New York, purchasing agent, Johns-Manville Corporation, New York, launched a six-session course on How to Buy Steel, conducted by the Educational Committee of the association, at Midston House, New York, on November 8th. The sessions are being held Monday evenings, and a full quota of 40 is registered for the class. Each session covers a different phase of the subject, namely: production, manufacture, marketing, warehouses, prices and pricing methods, and technological advances. The committee which arranged for the course is headed by Henry Meyer, purchasing agent, General Bronze Company.

## RECENT ACTIVITIES OF BRITISH COLUMBIA ASSN.

The regular monthly meeting of the Purchasing Agents Association of British Columbia was held on October 12 in the Hotel Vancouver. Dean Goard, principal of the new Vancouver Vocational School, spoke on "The Benefits of the Vocational School" and outlined its many courses.

Archie Scott reported on the meeting of the district council and the Third Inter-Mountain Conference held recently in Los Angeles. Walter Mackie, retired Purchasing Agent for the Alberta Government Telephones, was presented with an honorary life membership in the association. Membership now totals 175.

The Vancouver Island Branch at Victoria, B. C. of the National Association  
(Please turn to page 262)



BEING USER AS WELL AS MANUFACTURER

HAS THE "Customer's Viewpoint"

## ON PIPE WELDING FITTINGS

The four Midwest pipe fabricating plants, and the Midwest Contracting Department are among the large users of Midwest Welding Fittings.

Hence, we have the "customer's viewpoint" when it comes to welding fittings. We know from our own experience what characteristics welding fittings must have to simplify piping layout . . . to reduce welding time . . . to improve piping design. The welding fittings manufacturing department always has the benefit of our extensive user experience.

This situation is one important reason for the high quality and exceptional practicality of all

Midwest Welding Fittings. Also important are the laboratory control of manufacturing procedures and the program of continuous research in piping and welding problems.

For more information about Midwest Welding Fittings, get in touch with the local distributor or our nearest office.

### MIDWEST PIPING & SUPPLY CO., Inc.

Main Offices: 1450 So. Second Street, St. Louis 4, Mo.

Sales Offices: New York 7-30 Church St. • Chicago 3-79 W. Monroe St. • Los Angeles 33-520 Anderson St. • Houston 2-229 Shell Bldg. • Tulsa 3-533 Mayo Bldg. • South Boston 27-426 First St.  
Stocking Distributors in All Principal Cities

WELDING FITTINGS IMPROVE DESIGN AND REDUCE PIPING COSTS



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## Drills and Screw Drivers

You already know "Dyno-Mite" Drills and Screw Drivers as efficient, light-weight production tools. Perhaps you've thought they couldn't be improved on. Millers Falls engineers didn't agree — so now you can use even finer "Dyno-Mite" portable electric drills and screw drivers. Here's the line-up on these new, more powerful "Dyno-Mites":



### PRODUCTION DRILLS

You get more power — more production — with the new "Dyno-Mite" drills. A high torque model equipped with a  $\frac{3}{8}$ " chuck may be just what you've needed to speed up your work. High speed models specially for drilling small-diameter holes in non-ferrous metals with minimum burr; slower speed, high torque models for stainless and hard alloy steels. A model for every need!



On production assembly lines where a myriad of screws and nuts must be driven rapidly and uniformly, manufacturers know the velvet smooth, vibrationless action and sensitivity of Millers Falls "Adjustomatic®" clutches. The new "Dyno-Mite" screw drivers and nut runners have the "Adjustomatic" clutch . . . plus new, more powerful power units which handle machine screws and wood screws with efficiency and dependability. "Dyno-Mite" screw drivers and nut runners will meet your most rigid requirements.

What are your production or maintenance power tool needs? Chances are Millers Falls has the right tool for the job in its line of nut runners, hammers, disc sanders and polishers, bench grinders, portable grinders and electric saws.

Write for the name of your Millers Falls distributor.



*Portable Electric Tools*

MILLERS FALLS CO. • GREENFIELD, MASSACHUSETTS

(Continued from page 260)

of Purchasing Agents was inaugurated and officers installed on October at the Union Club. The meeting was addressed by George Morrow, past national director. Officers of the group are: Geo. Lindsey, president; E. B. Williams, vice-president; W. B. Dickieson, secretary-treasurer.

The Educational Committee presented John Monk, senior technician, personnel department of the City of Vancouver, who addressed the regular meeting on October 26 on the subject "Planning a Staff Training Program".



### CANTON ASSOCIATION GROUP ENJOY UNUSUAL MEETING

About twenty-five members and guests of the Purchasing Agents Association of Canton enjoyed an unusual type of meeting on October 20 when they visited the Boston reservation of the 112th Eng. Corps. USNG, near Peninsula, and adjacent to the Cuyahoga river. The visit was arranged through the courtesy of Lt. Col. Wm. Hummel. Dinner was prepared and served by the mess sergeant and his assistants.

Following dinner, Col. Hummel showed official moving pictures of the Normandy invasion, action on Guam, the trial of German saboteurs, and others on allied subjects.



### NEW ENGLAND ASSN. HEARS HOOD RUBBER CO. PRESIDENT

C. Lawrence Münch, president of the Hood Rubber Company, a division of the B. F. Goodrich Company, was guest speaker at the November 8 meeting of the New England Purchasing Agents Association, held in the Hotel Vendome. Mr. Münch is also president of the Boston Chamber of Commerce.

The afternoon conference, held in a private room of the hotel, had as a subject for discussion "Selling Purchasing to Department Heads". Martin B. Horan, training director in the personnel department of the Acushnet Process Company led the discussion.

A large group from the association visited the new assembly plant of the General Motors Corporation in Framingham, Mass., on November 16.

The annual Christmas dinner and entertainment will be held at the Hotel Bradford, Boston, on Monday, December 13. Leo Cotton, Berke Brothers Distilleries, Inc., is chairman.



### CAROLINAS-VIRGINIA MEETING TO BE HELD DECEMBER 10-11

The next quarterly meeting of the Carolinas-Virginia Purchasing Agents Association will be held on December 10 and 11 at the Carolina Hotel, Pinehurst, North Carolina. Guest of honor at the meeting will be Ralph O. Keefer, president of the National Association of Purchasing Agents, who will speak at the morning session on December 11.



*Cookie Cutters, Molded for the Chickadees, Tulsa, Oklahoma*

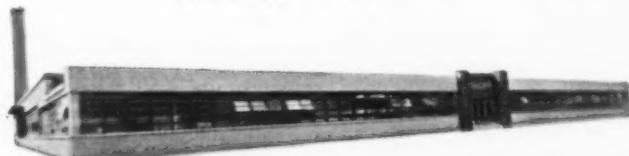
## *Skillful Molding* CUTS A CUTE COOKIE



These cookie cutters which we molded for the Chickadees, Tulsa, Oklahoma, are a real double feature. First they're attractive cookie cutters. Hang them on a Christmas tree and they're colorful ornaments.

To gain this double appeal, the product had to be made of a plastic material. We chose a material that would be kitchen practical as well as Christmas tree glamorous. Sound engineering plus exacting molding craftsmanship did the rest.

We will handle your plastic problems with the same careful consideration of your product's requirements. So whenever plastics are called for—make our new, modern plant your first step to a better plastic product.



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# PERSONALITIES

## *in the NEWS*

**Joe S. Thomas** has been appointed Director of Purchases of the Armco Steel Corporation, Middletown, O., according to an announcement by W. W. Sebald, presi-



J. S. Thomas

dent. Charles Beck has been named to the newly created post of Manager of Raw Materials Supply.

Mr. Thomas, who fills the vacancy caused by the death of Newman Ebersole in September, joined the Armco organization in 1927, directly after graduation from Cornell University where he received a degree in Mechanical Engineering. He was given special sales training, and in 1928 was transferred into the home office of the Armco Sales Division. He occupied a number of positions in the home office and in 1935 was sent to New Orleans as a sales representative.

In February, 1941 he was appointed Assistant to Director of Purchases, and on July 1, 1947, Assistant Director of Purchases.



Charles Beck

Mr. Beck, a graduate of Purdue University, M. E., has been with company since 1926. He was most recently Assistant General Superintendent of the Middletown Division.

**Ray H. Anders** has been appointed Director of Purchases of the Sun Oil Company, Philadelphia, Pa. He succeeds Henry Thomas, who retired on December 1, after 36 years' of service.

Mr. Anders, until recently manager of Sun's Industrial Products Department, will be assisted in his new duties by Roy A. Hurst, Assistant Director of Purchases.

Robert G. Dunlop, president of the company, in making the announcements, praised Mr. Thomas' distinguished career, and described Mr. Anders as well-qualified for his new post and as "another Sun man who has come up the ladder to a position of great responsibility."

Mr. Anders, a graduate of Pennsylvania State College with a B. S. degree in chem-



Ray H. Anders

istry, was first employed by the George W. Blalon Corporation, Pittsburgh, and later served as the Allentown, Pa., manager of the B. F. Goodrich Company. He became associated with Sun Oil Company in 1929 as an industrial products salesman in the Trenton (N. J.) district. In 1937 he became manager of industrial product sales in the Philadelphia division.

In September, 1944, he was named assistant manager of the Industrial Products Department and in January, 1946, succeeded Fran R. Markley (now Sun's General Sales Manager), as manager of the department.

Mr. Hurst, Assistant Director of Purchases, has been with the company since 1916.

**J. Grady Gray** has been appointed Purchasing Agent of Brown & Root, Inc., Houston, Tex., succeeding P. H. Caldwell, who resigned to go into business for himself.

**Gilbert H. Tate** has been appointed Assistant Purchasing Agent of the Michigan Seamless Tube Company, South Lyon, Mich. Prior to the present appointment,



Gilbert H. Tate

Mr. Tate was in charge of stores for the company for two years. He is a veteran of more than three years' service with the navy. Colin R. Grant is Purchasing Agent of the company.

**O. E. Ostram** has been named Purchasing Agent of Southwest Steel Products, Houston, Tex.

**P. C. Webb** has been promoted to Assistant Purchasing Agent of Eastern States Petroleum Company, Houston, Tex. Robert S. Strange is Purchasing Agent.

**Daniel F. Hulgrave** has been appointed director of the purchasing and salvage section of the Procurement and Schedules Staff of General Motors Corp., Detroit,



D. F. Hulgrave

Mich., according to an announcement by C. E. Wilson, president. Mr. Hulgrave, who has been Manager of Purchases of

(Please turn to page 266)



## SUN HELPS SOLVE UNIQUE POWER PROBLEM

### Utility Company on Nantucket Now Able to Burn Same Oil in Diesel, Gas Plant, and Steam Boilers

Because of unique problems arising from serving an island resort, Nantucket Gas & Electric Company sought to use the same heavy, low-cost oil as fuel in driving its 1,000-hp diesel, as fuel in the boiler feeding its turbines, and as an enrichment agent in gas-making.

Technical representatives of Sun Oil Company cooperated with engineers of Nantucket Gas & Electric

Company, the manufacturer of the diesel, and the company which installed it. Sun is proud of the part it played in this unique installation, which may set a pattern in the public utilities field wherever similar conditions are encountered.

Whatever power generation, lubrication, combustion or processing problems you may have in connection with the use of petroleum

products, the technical staff of Sun Oil Company is available to cooperate with your engineers, as was done in this instance. A telephone call or letter to the Sun Oil Company office nearest you will bring you the services of a Sun Engineer without obligation.

For the complete story, with illustrations, of the Nantucket installation write for folder PU-12.

**SUN OIL COMPANY • Philadelphia 3, Pa.**  
In Canada: Sun Oil Company, Ltd., Toronto and Montreal

**SUN PETROLEUM PRODUCTS**  
"JOB PROVED" IN EVERY INDUSTRY



(Continued from page 264)

the Cadillac Motor Car Division, Succeeds H. L. Dinger, who, for reasons of health, is being assigned to other duties.



R. A. Vogel

Mr. Hulgrave started work with Cadillac in 1908, immediately after finishing school, and has been with that organization ever since. He was in the sales department from 1912 until shortly after World War I, when he was made Manager of Purchases.

**Raymond A. Vogel**, a veteran of 34 years in Cadillac's purchasing department has been named to succeed Mr. Hulgrave as Manager of Purchases for the Division.

**Everett A. Taylor**, Purchasing Agent, Providence Gas Co., Providence, R. I., for the past twelve years, has been named Coke Sales Manager of the company. Mr. Taylor is a former president of the Purchasing Agents Association of Rhode Island, and a former vice-president of N. A. P. A.

**Edward Keegan**, Purchasing Agent of the West Springfield (Mass.) plant of the General Electric Company, has been named General Purchasing Agent of the new G. E. plant at Lockland, O.

**Frank N. Fowler**, Assistant Purchasing Agent, Hampden Glazed Paper and Card Co., Holyoke, Mass., has been named production manager of the company.

**Daniel G. Donovan**, Director of Purchases of the Pepperell Manufacturing Co., Boston, Mass., and president of the Purchasing Agents Association of New England, recently addressed the Sales Managers Club of the Boston Chamber of Commerce on the relationship between sales managers and purchasing agents.

**Arthur G. Hopcraft**, Purchasing Agent for the Cleveland Worm & Gear Company, Cleveland, O., will talk before the Cleveland Dotted Line Club at a noon-day luncheon on Monday, December 13. His subject will be "Buying Influences Behind the Purchasing Agent in a Manufacturing Plant." The club is an organization composed of advertising representatives for Associated Business Papers member publishers.

Mr. Hopcraft is a past president of the Cleveland Purchasing Agents Association and past president of the National Association of Purchasing Agents.

**Vincent E. Crawford, Jr.** has been named Purchasing Agent for the Linderme Tube Company, Cleveland, O. He replaces Thomas G. Auble, who has resigned.

**Robert L. Lehr** has succeeded George C. McClure as Purchasing Agent for the North American Refractories Co., Cleveland, O. Mr. McClure has retired after 18 years in the post. Mr. Lehr was formerly his assistant.

**William T. O'Connor**, Vice President in Charge of Purchasing of Manning, Maxwell & Moore, Inc., and Companies, New York, N. Y. will retire after 40 years' service. The Board of Directors of the company has granted Mr. O'Connor's request for retirement as of December 31, 1948.

Mr. O'Connor started October, 1908, as shipping clerk with Schaeffer & Budenberg in Brooklyn. During World War I, in addition to his duties as supervisor of shipping and receiving, he helped in the procurement of critical materials. In 1920 he was appointed Purchasing Agent.



William T. O'Connor

In 1923 when Schaeffer & Budenberg consolidated with American Steam Gauge & Valve Company, under the name of American Schaeffer & Budenberg Corp., he stayed on as Purchasing Agent of the new concern. In 1928, when Manning, Maxwell & Moore, Inc., acquired the American Schaeffer & Budenberg Corp., he was retained as a Divisional Purchasing Agent.

Mr. O'Connor was appointed General Purchasing Agent in 1932, and on February 28, 1945 was elected Vice President in Charge of Purchasing.

The company has plants at Bridgeport, Conn.; Jersey City, N. J.; Muskegon, Mich.; Stratford, Conn.; Tulsa, Okla., and Watertown, Mass.

Mr. O'Connor joined the Purchasing Agents Association of New York in 1922 and served on the executive committee from 1926 to 1929. He also served on many other committees of the association.

He has attended almost all of the conventions of the National Association of Purchasing Agents, and has many friends in the purchasing profession throughout the United States and Canada, in addition to a host of friends in other branches of the business world.

James A. Reynolds, Resident Purchasing Agent at the company's Bridgeport, Conn., plant, has been appointed General Purchasing Agent as of January 1, 1949, and will be located in New York city.

**G. L. Hartman**, Vice President and Manager of the Milwaukee Flush Valve Co., Milwaukee, Wis., and a past president of the Purchasing Agents Association of that city; and W. Howell Pritchard, Purchasing Agent of the company, were panel members in a recent discussion on "Your Advertising Analyzed" held at a meeting of the Milwaukee Industrial Marketing Association. Mr. Pritchard is vice-president of the local association.

**Reavis T. Crawford** has been appointed Purchasing Agent of the Baron Steel Company, Toledo, O. Before his present appointment, Mr. Crawford was Purchasing Agent for the R. G. LeTourneau Co., Vicksburg, Miss. He was also previously associated in a steel purchasing capacity with the Tennessee Coal, Iron & Railroad Corp., a subsidiary of the United States Steel Corporation, and was with the steel division of the War Production Board in Washington.

**Harold E. Haney** has been appointed Purchasing Agent at the University of Mississippi, University, Miss. He had been superintendent of buildings and acting purchasing agent.

**A. H. Behnke**, Director of Purchases and Production for Hotpoint, Inc., Chicago, Ill., has been appointed Vice President in Charge of Materials, a newly created post.

**Paul L. Palmerton**, assistant to the president of the Western Electric Company, New York, N. Y., has become Comptroller of the company's Purchasing and Traffic Division.

Mr. Palmerton's post is a newly created one. His duties call for making studies of market trends, material costs and related matters, and for recommending procedures for coordinating purchasing activities of the company's plants and distributing houses.



Paul L. Palmerton

A graduate of Indiana University and a veteran of World War I, Mr. Palmerton joined Western Electric Company in 1929, after a varied career in the rubber industry. At that time he was appointed foreign manager of Electrical Research Products, Inc., then a company subsidiary. He has since been European manager, and after ERPI merged with the parent company in 1940, manager of the sales department, service manager, radio merchandise manager, assistant manager of the radio division and assistant to the president.

(Please turn to page 268)

PRODUCT IMPROVEMENT THROUGH BRIDGEPORT ENGINEERING ALLOYS



Bolts made from  
Bridgeport's Silicon  
Bronze No. 609.



Safety wire rope clip made from Bridgeport's  
Phono-Electric Bronze 840. Courtesy The  
Thomas Laughlin Company, Portland, Maine.



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### FOR HIGH STRENGTH AND CORROSION RESISTANCE

Call Your Local Office for  
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Cincinnati 2, Ohio . . . . . 1703 Carew Tower  
★Cleveland 6, Ohio . . . . . 1921 E. 119th Street  
★Denver 2, Colorado . . . . . 1962 Blake Street  
Detroit 26, Michigan . . . . . 754 Buhl Bldg.  
Grand Rapids 2, Mich. . . . . 510 Assoc. Com. Bldg.  
★Houston 3, Texas . . . . . 2216 Walker Avenue  
Indianapolis 6, Indiana . . . . . So. Holt Road  
Jacksonville, Florida . . . . . 5133 Appleton Avenue  
★Los Angeles 12, California . . . . . 130 S. Hewitt St.  
Milwaukee 2, Wisconsin . . . . . 715 N. Van Buren St.  
★Minneapolis 1, Minnesota . . . . . 100 N. Second St.  
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Providence 3, Rhode Island . . . . . 60 Clifford St.  
Rochester, New York . . . . . 816 Reynolds Arc. Bldg.  
★St. Louis 3, Missouri . . . . . 2135 Delmar Blvd.  
St. Paul 5, Minnesota . . . . . 703 Ashland Avenue  
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Washington 5, D.C. . . . . 616 Southern Building

New, 116-page Warehouse Stock List  
and Technical Digest available.

From an engineering standpoint, few articles are subjected to such severe service as wire and cable connectors, bolts, nuts, wire rope clips and other pole line and marine hardware. They are called upon to give long, dependable service and withstand such conditions as moist air, salt air, chemicals, gases, smoke, water solutions, etc.

Bridgeport's engineering bronzes are finding increasing use in such applications because they cannot rust or dezincify, are not subject to failure from stress corrosion cracking and stand up where ordinary materials fail. In addition to dependability and corrosion resistance, bolts and other fastenings made from these alloys are stronger than those made from ordinary steel, which be-

comes even weaker as time takes its toll in rust and deterioration. Bridgeport has specialized for many years in engineering bronzes, furnishing high-strength, corrosion-resistant copper-base alloys for connectors, bolts, and other pole line hardware right from the start for electrified railways.

Bridgeport manufactures silicon bronzes, silicon aluminum bronzes and tin bronzes for applications in many branches of industry, communications and transportation. They are suitable for cold forging, hot forging or machining, depending upon the alloy selected. Consult Bridgeport's Laboratory for help in solving difficult metal problems and improving your product. Contact the nearest Bridgeport office.



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In Canada—Noranda Copper and Brass Limited, Montreal

## BRIDGEPORT BRASS

BRASS • BRONZE • COPPER • DURONZE—STRIP • ROD • WIRE • TUBING

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Every Type  
of Floor

SAVE FLOORS  
SAVE MONEY  
and TIME

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CASTERS  
&  
WHEELS



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(Continued from page 266)

Thomas E. Jolly, Vice President in Charge of Engineering and Purchases, Aluminum Company of America, Pittsburgh, Pa., was elected president of the American Standards Association at the group's 30th annual meeting, held recently in New York.

Leo S. Busby has been advanced to the post of Buyer for the General Petroleum Corporation, at the company's Los Angeles, Calif., headquarters. He had been supervisor of office procedure in the purchasing department since February, 1946. Mr. Busby joined General Petroleum in 1926 as a receiving clerk in the purchasing department.

L. R. Gardner has been named Purchasing Agent for the Egyptian Lacquer Manufacturing Co., South Kearney, N.J.

John B. Anthony has been appointed Purchasing Agent of the Patterson-Sargent Company, Cleveland, succeeding Arthur R. Curphy, retired.

C. R. Brown has been appointed Purchasing Agent at the E. W. Bliss Company, Cleveland, O. He replaces Edward E. Ebel who was recently named production manager of the company.

Jim Rice has been appointed as Purchasing Agent of the University of Missouri, Columbia, Mo., to succeed Urban Wussler, resigned. Mr. Rice has been assistant to the business manager.

(Please turn to page 270)

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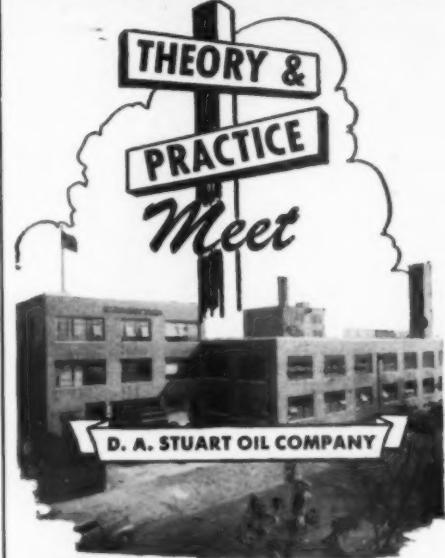
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**CUTTING FLUID**



SELDOM does the most carefully developed scientific theory provide the final answer in the shop; neither is practical experience entirely dependable. It usually takes a combination of both in order to select and apply the cutting fluid that will give the best results on a given machining job.

D. A. Stuart Oil Company offers you a combination of theory and practical experience that pays dividends in better machining and fewer production headaches. The theory emanates from research in the modern D. A. Stuart laboratories; practical approach comes from men who have years of experience in shop problems and techniques. That is why Stuart products so often smooth out jobs on which other cutting fluids fail. Ask your D. A. Stuart Oil Co. representative to tackle your tough jobs.

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with every barrel

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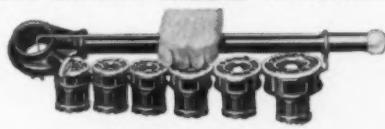
## Thread Small Pipe

in almost  
"Nothing.."  
Flat



### RIDGID Ratchet Threaders Nos. 00R, 111R and 12R make short work of threading $\frac{1}{8}$ " to 2" pipe

● No fuss or bother getting ready—just snap in size die head you need and these smart little RIDGIDS are ready to go to work. You don't need special dies for close-to-wall threads. Heat-treated tool-steel dies give you fast clean accurate threads. These efficient durable RIDGID threaders are favorites with pipe tool users everywhere. Buy them at your Supply House.



... Handy free carrier for any group of sizes.

## Clean Accurate Pipe Cuts

at  
**Top Speed**

**RIDGID**  
efficiency-balanced  
cutter saves your  
muscle... gives you  
more pipe cuts for  
your money...

● The efficiency-balanced RIDGID Cutter is a natural for extra fast clean pipe cutting. Thin blade tool-steel cutter wheel always tracks perfectly—leaves practically no burr. Every cutter factory-tested to make sure of it. Your choice of 5 sizes to 6" pipe; 4-wheel cutters to 4," designed for easier work in tight places. Save your time and muscle—buy RIDGID Cutters at your Supply House.

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4-wheel cutter  
for fast cuts  
in tight places.



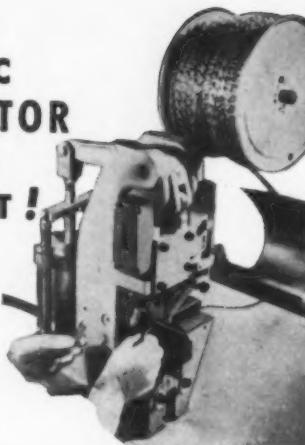
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PIPE TOOLS

**Put this AMP  
AUTOMATIC  
WIRE TERMINATOR  
in your plant  
WITHOUT COST!**

The AMP-O-MATIC Wire Terminator is now LOANED WITHOUT COST on a one year renewable basis — to purchasers of 100,000 AMP Auto-Crimp Terminals of one kind.



You have a wide choice of AMP Auto-Crimp Solderless Terminals—pre-insulated, non-insulated, insulation support, and insulation piercing types—ranging in price from \$2.50 per thousand to \$17.14 per thousand.

Since the AMP-O-MATIC Wire Terminator installs terminals automatically, the cost of installing them is brought down to the irreducible minimum.

Do not hesitate to have your wiring program analyzed in terms of this AMP high speed automatic tooling. Actual cost reductions are significant.

Phone, wire, or write for complete literature, terminal types available, and data sheet.

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**80**  
Oakite  
Materials  
to solve  
your cleaning  
problems

**There's a difference  
—in your favor**

LET'S say a degreasing, descaling, paint-stripping or other cleaning problem comes up in your plant, and you have to buy materials to handle the job. You call in the Oakite Technical Service Representative. He helps you work out the problem . . . recommends the Oakite materials and methods that solve the problem, economically. You're satisfied.

Being the kind of buyer who looks to the service behind the product, you find that the one big difference between cleaning materials and Oakite cleaning materials is helpful, freely available Oakite Service. This difference in your favor is as close as your 'phone. Call the Oakite man or write to Oakite Products, Inc., 54 Thames St., N. Y. 6, N. Y., and we'll have him call.

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REG. U. S. PAT. OFF.

MATERIALS  
METHODS  
SERVICE

**Specialized Industrial Cleaning**

Technical Service Representatives in Principal Cities of U. S. & Canada

(Continued from page 268)

**William Angus**, Purchasing Agent for the Pacific Marine Supply Co., Seattle, Wash., has become assistant to the president of the firm. He will continue to supervise purchasing, which will be handled by Louis O. Halverson as Purchasing Agent and Stanley Lake, Assistant Purchasing Agent.

**J. A. McClain** has succeeded Ben Robertson as Purchasing Agent for Permanente Metals, Tacoma, Wash. Mr. Robertson has gone into business for himself.

**Jack D. Jones** has succeeded H. R. Newkirk as Purchasing Agent for Ocean Tow, Inc., Seattle, Wash.

**Harold Rumohr** has been named Purchasing Agent of the city of Wenatchee, Wash.

**Blythe M. Reynolds** has been named by the board of directors of Merck & Co., Inc., Rahway, N. J. as Vice President for Engineering and Purchasing.



Blythe M. Reynolds

Mr. Reynolds came to Merck in January, 1944, and has been Director of Engineering and Purchasing since March, 1947. A graduate of Clarkson College of Technology, he received an M. S. degree in chemical engineering from Massachusetts Institute of Technology in 1920. He served in World War I as a lieutenant in the Marine Corps and was for 10 years with General Chemical Co., Marcus Hook, Pa. as a chemical engineer. He was president and general manager of his own company, Reynolds Chemical Corp., Utica, N. Y., from 1926 until 1930, when he sold the business to Heyden Chemical Corp. He was a vice-president of that organization until 1944 when he joined Merck & Co., Inc.

**R. L. Clevenger** has been appointed General Purchasing Agent of the Lily-Tulip Cup Corporation, New York, N. Y. He was formerly in charge of purchasing for the company's mid-west division.

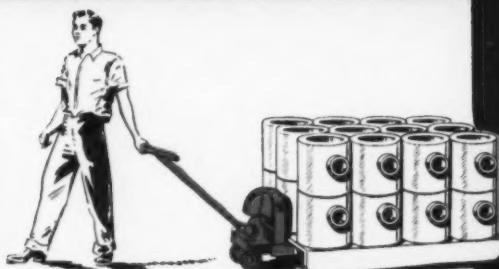
**Francis W. Abbott** has been named General Purchasing Agent of Wilson Brothers, Chicago, Ill., succeeding H. A. Johnsons, who has held the position for 25 of the 57 years he has spent with the company.

**Charles L. Feeley** has been appointed Acting Purchasing Agent of The Ohio Rubber Company, Willoughby, O., succeeding Alan L. MacCracken. Mr. MacCracken has been named vice-president of the E. P. Lambert Company, Akron, O.

# STOP GET A TRUCK



## A YALE TRUCK



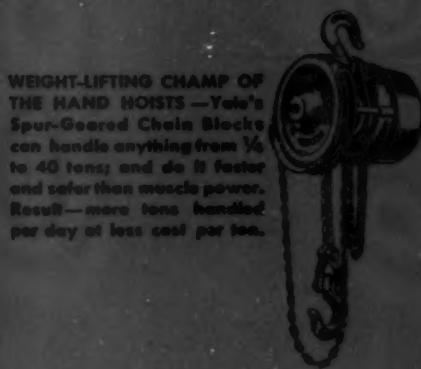
A Yale Hand Lift Truck moves heavy loads with ease—fewer men handle more material faster, and with greater safety than when "grunt and groan" methods are used. Many users report: greater output per man hour, much lower cost per ton. Capacities to 20,000 lbs.

Consult telephone directory for local Yale representative or send for Catalog—HLT-T. The Yale & Towne Mfg. Co., 4581 Tacony Street, Philadelphia 24, Pa.



### "ON THE MOVE" WITH YALE

**WEIGHT-LIFTING CHAMP OF THE HAND HOISTS**—Yale's Spur-Geared Chain Blocks can handle anything from  $\frac{1}{2}$  to 40 tons; and do it faster and safer than muscle power. Result—more tons handled per day at less cost per ton.



**"MONEY-SAVING SPACE SAVER"** . . . That's what users call the Yale High Lift Fork Truck. Piles palletized loads calling high. Scores of other standard models to fit your individual needs. Capacities to 60,000 lbs.



**2 DAYS WORK WITHOUT A RECHARGE**—That's the kind of performance the new Yale Worksafer, with their capacity-plus batteries, give you. They travel and lift by electric power. Have 2 forward and reverse speeds. 7 styles. Capacities from 1,000 to 6,000 lbs.



**YALE OFFERS NEW SCALE LINE**—The Load Kings, for the weighing, counting, batching and testing of all kinds of materials. They cut weighing time, give you prolonged accuracy, lowest possible maintenance, increased scale life. With capacities up to 60,000 lbs. Yale Scales meet all industrial needs.



another AEROL advanced design...

NEW



The World's First  
*Guaranteed*  
WATER-TIGHT  
WHEEL!

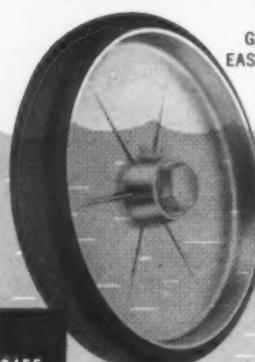
This new Aerol-Seal Wheel operates at maximum efficiency even when constantly subjected to sand, water, steam, detergents, abrasives, or other foreign matter. Made to exacting Aerol specifications from only the finest materials: lightweight, high-strength aluminum alloy; nationally known and recognized Timken and Bower precision ground bearings; molded-on tire made from oil and brine-resistant solid rubber.

Aerol-Seal Wheels are tested to withstand 85 lbs. of air pressure and are proven by thousands of hours of service. Available in standard sizes. See your distributor or write, wire or phone today for complete information.

Used by World's Leading Packers!

NO WHEEL ROLLS LIKE AN  AEROL

GUARANTEED 20%  
EASIER ROLLABILITY



Ends Greasing & Bearing Replacements • Improves  
Reliability • Triples Wheel Life • Resists Corrosion



AEROL CO.

1823 E. Washington Blvd • Los Angeles 21, Calif • Prospect 9455

Your Best Buy  
for  
Production Metal Sawing

Griffin  
MOLYBDENUM HIGH SPEED STEEL

GRiffin Molybdenum High Speed Steel Blades  
of tough, specially Griffin-tempered alloy steel,  
are a most economical buy, for they will often out-cut  
ordinary tungsten steel blades eight to ten times. Uniform  
raker-set teeth that bite. Power machine and hand  
frame sizes.

#### OTHER GRIFFIN BEST BUYS

Griffin Tungsten High Speed Steel Blades, for cutting very  
toughest alloys . . . New Griffin tungsten hand saw blades  
flexible as a soft-back, tough as an all-hard . . . Griffin Non-  
Strip-teeth do not break out when sawing thinnest sheet or  
tubing — hand frame sizes . . . Write for latest Price List.

#### General Sales Agent

JOHN H. GRAHAM & CO., INC.  
Dept. C, 105 Duane St., New York 8, N. Y.

•GRIFFIN•

Hack Saw Blades

MADE BY G. W. GRIFFIN CO. FRANKLIN, N. H.

Hack and Coping Saw Blade Specialists Since 1880

#### AMONG THE COMPANIES YOU BUY FROM

New York, N. Y.—Mathieson Chemical Corporation. Harry P. Smith, formerly New York district sales manager, has been made assistant general manager of sales.

Philadelphia, Pa.—Hajoca Corporation. A new branch warehouse and sales office has been opened at 225 West Erie Avenue.

Lebanon, Pa.—Lebanon Steel Foundry. Edward H. Platz, Jr., has been appointed manager of alloy sales.

Mineola, N. Y.—Goble Aircraft Specialties, Inc. John J. Quigley has been appointed vice-president and general manager.

Houston, Tex.—Goodyear Tire & Rubber Co. Republic Supply Co. has been named distributor of Goodyear industrial rubber products.

Detroit Mich.—The H. M. Harper Company. A factory branch office has been opened in the Curtis Building, 2842 West



J. K. Esler, Jr.

Grant Boulevard. J. K. Esler, Jr., formerly associated with the company's Chicago headquarters, is in charge. The company manufactures non-ferrous and stainless steel fastenings.

Washington Pa.—Jessop Steel Company. Frank B. Rackley has been made vice-president in charge of sales.

Oakland, Calif.—Reynolds Metals Company. The American Brass & Copper Company has been appointed a specialty distributor of the company's aluminum products.

Syracuse, N. Y.—Dampney Company of America. R. J. Denton Company has been named distributor of the company's protective coatings.

Detroit, Mich.—Monsanto Chemical Company. Thomas J. Martin has been appointed branch sales manager for the company's plastics division.

New York, N. Y.—Clearprint Paper Co. A new office has been opened at 505 Fifth Avenue, in charge of Nat Heiman.

(Please turn to page 274)

# WEIRTON

## HIGH-CARBON STRIP COLD-ROLLED SPRING STEEL



### REDUCES THE COST IMPROVES THE PRODUCT

Due to the consistent uniformity of Weirton high-carbon strip cold-rolled spring steel, cold forming or blanking is easier. It has met requirements for a variety of products where high fatigue-resistance is a principal factor.

Where forming is required, Weirton supplies spheroidized-annealed cold-rolled spring steel to insure customers simple, economical fabrication. The controlled grain structure provides exceptional ductility for such a high carbon steel. Close technical control during manufacture insures those precise qualities you expect in a spring steel.

Where clean, economical blanking is required, Weirton supplies a product which is temper rolled to produce controlled ranges of hardness and tensile strength. The desired ranges are designed to meet the specific requirements of the customer's tool practice.

Weirton cold-rolled spring steel responds accurately to heat treatment after forming or blanking, has rigidly controlled chemical and physical properties, exact constancy of grain structure and controlled limits of decarburization. It has exceptional uniformity of gauge and width.

It is supplied with the desired chemical analysis and for specified heat treating and hardness ranges in strips up to 7 inches wide. Ask Weirton metallurgists to work with you in determining the correct specifications for your application.

## WEIRTON STEEL CO.

WEIRTON, W. VA. • Sales Offices in Principal Cities



Division of NATIONAL STEEL CORPORATION  
Executive Offices, Pittsburgh, Pa.



SPHEROIDIZED FOR  
EASIER COLD-FORMING



SPHEROIDIZED



PEARLITIC

**Take a deep breath  
before you**

# ANSWER THIS QUESTION

**Q. Is the air inside your buildings as  
healthful and as comfort-inducing  
as you can reasonably make it?**

Proper ventilation is more than a matter of just "beating the heat" in summer. Fresh air circulation is just as essential when cold weather closes the windows. Air in motion keeps people in action . . . steps up efficiency, reduces fatigue. For years, Emerson-Electric has led in supplying dependable ventilating and exhaust fans . . . providing good air for indoor people everywhere. See your electrical contractor for your needs, or write for free Exhaust and Ventilating Bulletin No. T-97.

**THE EMERSON ELECTRIC MFG. CO.  
St. Louis 21, Mo.**



**There is an Emerson-Electric Fan for every air-moving job**

Belt-drive Exhaust Fans—long-life, heavy-duty types available in 24, 30, 36, 42 and 48-inch blade sizes, capable of exhausting up to 19,350 cubic feet of air per minute.

Direct-drive Exhaust Fans—available in 5 sizes, ranging from 12 to 30 inches, with overlapping-blade assembly, and fully enclosed motors, in either ball-bearing or sleeve-bearing mountings.

Emerson-Electric Desk Fans—cooling, quiet breezes at the flip of a switch. 10, 12 and 16-inch blade oscillating models with famous Emerson-Electric long-life features, including 5-year, Factory-to-User Guarantee.

Emerson-Electric Air Circulators—available in 24 or 30-inch sizes, with floor column, counter-column, wall-bracket, or ceiling mounting, with 5-year, Factory-to-User Guarantee.

**EMERSON**  **ELECTRIC**  
**MOTORS • FANS** **APPLIANCES**

**Richmond, Va.**—Mixing Equipment Company. O'Neill Pump and Engineering Company has been named Virginia representative.

**San Francisco, Calif.**—Luria Bros. and Company, Inc. A branch office has been opened at 443 Pacific Gas and Electric Co. Building. Stanley Claster, formerly assistant manager of the St. Louis office, is district manager in charge of the new office.

**Los Angeles, Calif.**—Raybestos-Manhattan, Inc. A new warehouse and office has been opened at 4651 Pacific Boulevard, to service and stock rubber goods and packings for industrial and oil field requirements for Southern California.

**Atlanta, Ga.**—Titan Metal Manufacturing Company. Fulton Supply Company, 342 Nelson St., S. W., has been appointed distributor.

**New York, N. Y.**—Market Forge Company. Robert P. Rudy has been appointed district manager of the New York area. He will be in charge of the company's



Robert P. Rudy

material handling division office, located in the Grand Central Terminal Building, and will supervise all sales for the area.

**Bridgeport, Conn.**—General Electric Company. Clarence C. Walker, former commercial vice-president assigned to customer relations work in New England, has been appointed general manager of the company's construction materials department.

**Detroit, Mich.**—Michigan Abrasive Co. Complete fabricating facilities and general offices of the company have been moved into two new buildings at 2360 W. Jefferson Avenue.

**Houston, Tex.**—Marcus Transformer Company, Inc. W. E. Holiman Company, P. O. Box 851, has been appointed territorial representative for Texas, Louisiana, and Oklahoma.

**Cleveland, O.**—The Baker-Raulang Company. G. B. Davis has been promoted from assistant sales manager of the company to sales manager.

**Charlotte, N. C.**—The Sherwin-Williams Co. E. H. Steger will be in charge of the new textile industrial zone sales.

(Please turn to page 278)

To get ALUMINUM

PERFORMANCE  
AS SPECIFIED

phone your ALCOA ALUMINUM distributor



The Alcoa name on the aluminum he handles is more than just a trademark—it's foreknowledge of how the metal will perform. Alcoa research established the standard for its performance; Alcoa production control laboratories keep its quality up to the mark.

Your Alcoa distributor is a good man to know these days. His experience may help you find the answer to a tough problem—whether it involves sheet, shapes, rod, bar, tubing, or fasteners. His responsibility to you as a customer, is his challenge to be ever ready to serve you.

For a reliable source of aluminum, phone your nearest Alcoa distributor. He'll do his best for you. ALUMINUM COMPANY OF AMERICA, 1931 Gulf Bldg., Pittsburgh 19, Pennsylvania.

- Atlanta, Georgia
  - J. M. Tull Metal & Supply Co., Inc.  
Phone: WAlnut 3525
- Baltimore, Maryland
  - Whitehead Metal Products Co., Inc.  
Phone: LAfayette 2300
- Buffalo, New York
  - Brace-Mueller-Huntley, Inc.  
Phone: Riverside 2520
  - Whitehead Metal Products Co., Inc.  
Phone: Cleveland 1475
- Cambridge, Massachusetts
  - Whitehead Metal Products Co., Inc.  
Phone: TRawbridge 6-4600
- Charlotte, North Carolina
  - Edgcomb Steel Company  
Phone: 4-8768
- Chicago, Illinois
  - Central Steel & Wire Company  
Phone: REPublic 3000
  - Steel Sales Corporation  
Phone: BIShop 7700
- Cincinnati, Ohio
  - Williams & Company, Inc.  
Phone: CHorry 4700
- Cleveland, Ohio
  - Williams & Company, Inc.  
Phone: EXpress 7000
- Columbus, Ohio
  - Williams & Company, Inc.  
Phone: MAin 3291
- Dallas, Texas
  - Metal Goods Corporation  
Phone: Dixon 4-3925
- Detroit, Michigan
  - Steel Sales Corporation  
Phone: TYler 6-3000
- Houston, Texas
  - Metal Goods Corporation  
Phone: BEacon 3-8881
- Kansas City, North, Missouri
  - Metal Goods Corporation  
Phone: NOClay 3516
- Los Angeles, California
  - Ducommun Metals and Supply Co.  
Phone: KImball 0181
- Pacific Metals Co., Ltd.  
Phone: PProspect 0171
- Newark, New Jersey
  - Whitehead Metal Products Co., Inc.  
Phone: Biegelow 8-0500
- New Orleans, Louisiana
  - Metal Goods Corporation  
Phone: CANal 7373
- New York, New York
  - Whitehead Metal Products Co., Inc.  
Phone: WAikins 4-1500
- Philadelphia, Pennsylvania
  - Edgcomb Steel Company  
Phone: GArfield 3-6300
  - Whitehead Metal Products Co., Inc.  
Phone: BAldwin 9-2323
- Pittsburgh, Pennsylvania
  - Williams & Company, Inc.  
Phone: CEdar 8600
- Portland, Oregon
  - Pacific Metal Company  
Phone: BRoadway 0695
- Rochester, New York
  - Brace-Mueller-Huntley, Inc.  
Phone: GLenwood 0962
- San Francisco, California
  - Pacific Metals Co., Ltd.  
Phones: MISSION 7-1104  
ENterprise 1-0006
- Seattle, Washington
  - Pacific Metal Company  
Phone: MAin 0925
- St. Louis, Missouri
  - Metal Goods Corporation  
Phone: GOodfellow 1234
- Syracuse, New York
  - Brace-Mueller-Huntley, Inc.  
Phones: SYracuse 73-3341 9-6621
  - Whitehead Metal Products Co., Inc.  
Phone: SYracuse 5-4112
- Toledo, Ohio
  - Williams & Company, Inc.  
Phone: ADams 0102
- Tulsa, Oklahoma
  - Metal Goods Corporation  
Phone: 4-1175

**ALCOA** FIRST IN  
**ALUMINUM**



1888

1948

60 YEARS OF SERVICE

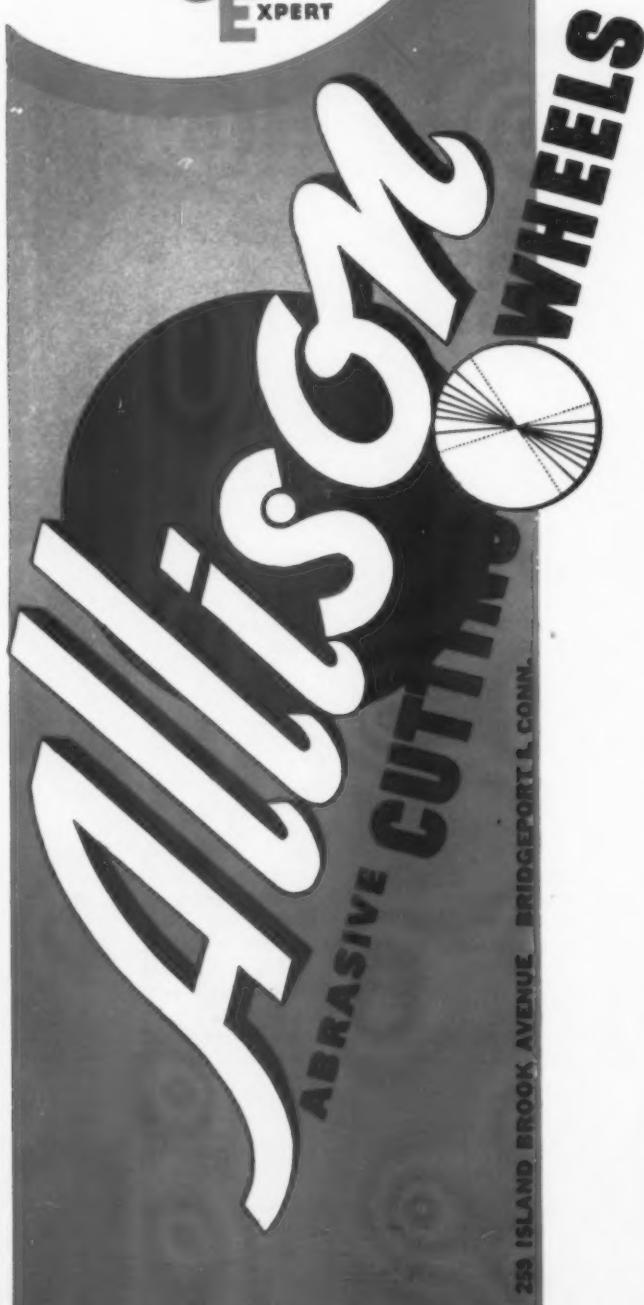
The Really Important Economies  
of Abrasive Cutting Come with a  
"Custom" Wheel Specification.

Because Allison specializes in abrasive cutting wheels and their successful use on all types of abrasive cutting machines, Allison experts will be thoroughly familiar with your equipment, the materials you cut and the problems you are up against.

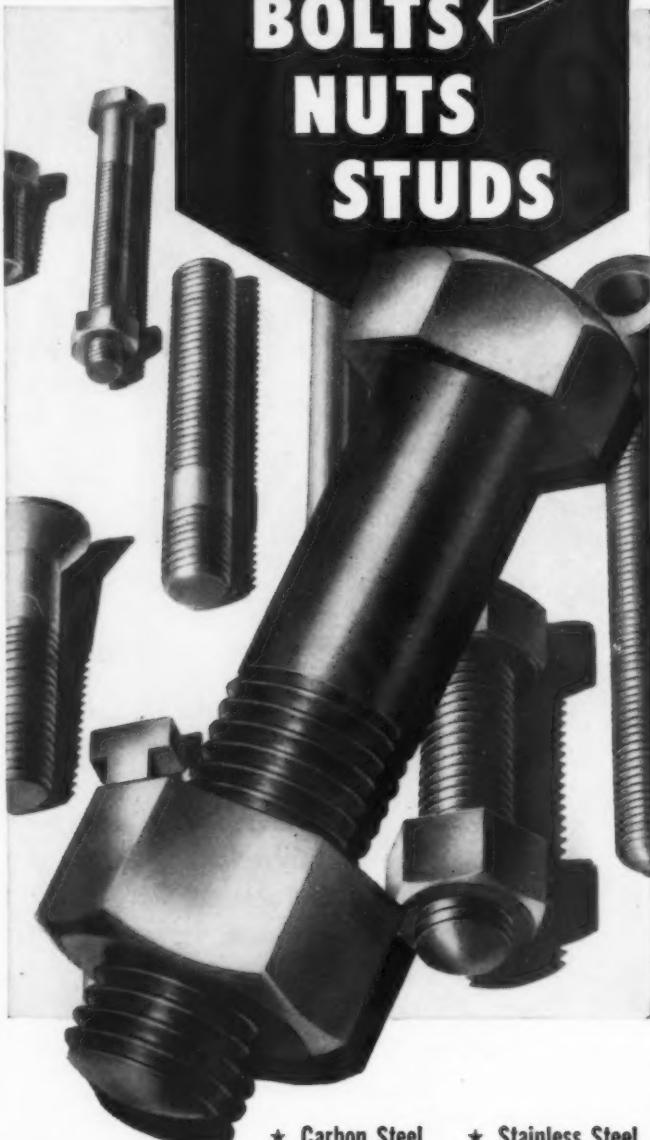
Because we have scored remarkable cost savings on a very wide range of applications we confidently invite you to hand us your toughest problem.

CALL AN

Allison  
**A**BRASIVE  
**C**UTTING  
**E**XPERT



First for  
**BOLTS** ←  
**NUTS**  
**STUDS**



BETTER BOLTS  
SINCE 1882

- ★ Carbon Steel
- ★ Heat-treated Alloy Steels
- ★ Stainless Steel
- ★ Silicon Bronze
- ★ Naval Brass

★ Accurately made in standard dimensions  
or to your own specifications.

USE HEADED AND THREADED FASTENERS FOR ECONOMY AND RELIABILITY

**PAWTUCKET**  
"The Bolt Man"  
MANUFACTURING COMPANY  
327 Pine Street • Pawtucket, R. I.  
THE PLACE TO SOLVE YOUR BOLT PROBLEMS

# Easier... Faster... Smoother Piping Jobs when CRANE-equipped throughout

For power, heating or process piping . . . whatever you need, Crane is the dependable source. Buying from the world's most complete line means delivery of what you want . . . valves, fittings, pipe, accessories, fabricated piping . . . in brass, iron, steel or alloys.

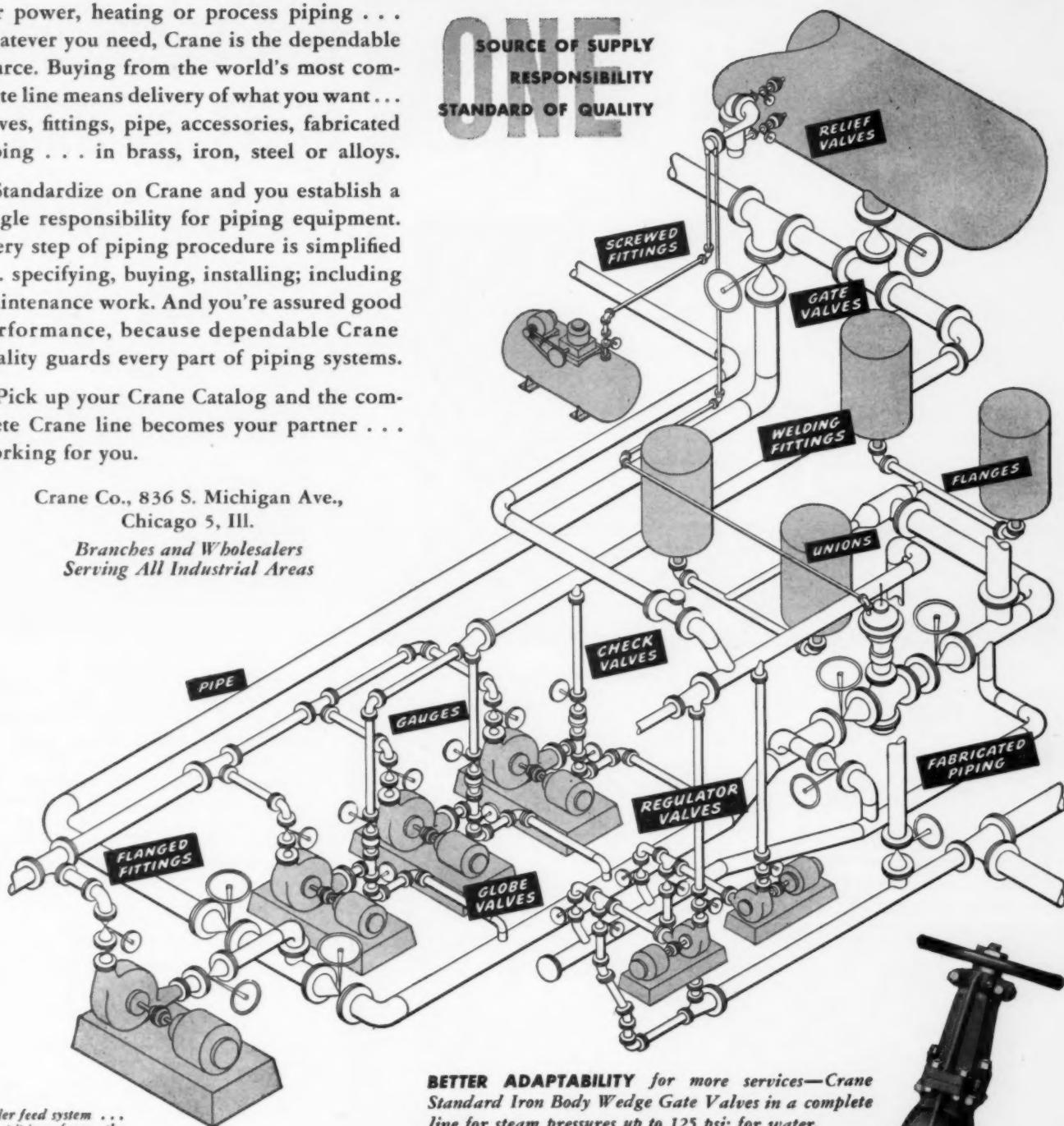
Standardize on Crane and you establish a single responsibility for piping equipment. Every step of piping procedure is simplified . . . specifying, buying, installing; including maintenance work. And you're assured good performance, because dependable Crane quality guards every part of piping systems.

Pick up your Crane Catalog and the complete Crane line becomes your partner . . . working for you.

Crane Co., 836 S. Michigan Ave.,  
Chicago 5, Ill.

*Branches and Wholesalers  
Serving All Industrial Areas*

**ONE**  
SOURCE OF SUPPLY  
RESPONSIBILITY  
STANDARD OF QUALITY



Boiler feed system . . .  
all piping from the  
complete Crane line.

**BETTER ADAPTABILITY** for more services—Crane Standard Iron Body Wedge Gate Valves in a complete line for steam pressures up to 125 psi; for water, oil or gas up to 200 psi. Made in outside screw and yoke, and non-rising stem patterns; screwed or flanged ends; brass-trimmed or all-iron. In sizes 2 in. and larger. See your Crane Catalog, pp 101-6.

EVERYTHING FROM . . .

VALVES • FITTINGS  
PIPE • PLUMBING  
AND HEATING

# CRANE

FOR EVERY PIPING SYSTEM

**EMPLOYER**

**SHOP WORKER**

**OFFICE HELP**

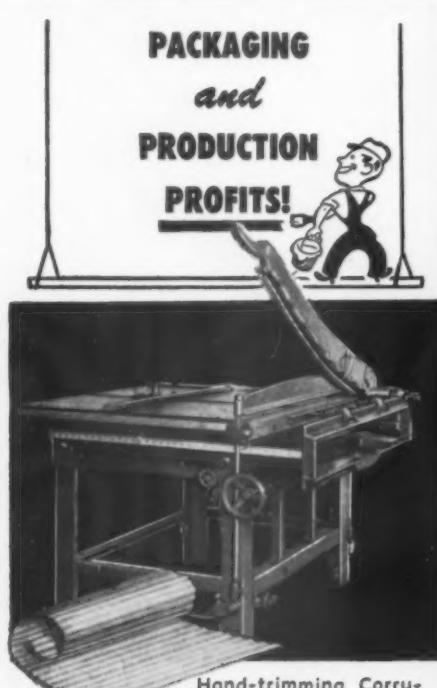
*All need a safe, cool water supply*

An abundant supply of cool water is a convenience and a necessity in any plant! Workers, whether in office or shop, are refreshed, and production is kept at the peak! Halsey Taylor Coolers and Fountains come in types to suit your requirements. Ask for latest catalog. The Halsey W. Taylor Co., Warren, Ohio

F-5

## HALSEY TAYLOR

Coolers & Fountains



For cloth, plastic, leather, cardboard, corrugated, light metals, etc., the Jacques Shear is an all-shop tool of precision cutting. See your Industrial Supplier or write for Folder #14.



**HOBBS**  
MANUFACTURING CO.  
Worcester 5, Mass.  
EST. 1882

**IF IT'S A FORGING**

**BILLINGS**

OUR HAMMERS  
TALK PRODUCTION...  
OUR FORGING  
ENGINEERS  
KNOW FORGINGS!

WRITE OUR  
FORGINGS DIV. Dept. SF-3  
THE BILLINGS & SPENCER CO.  
Hartford 1, Conn., U.S.A.

**New York N. Y.**—Reynolds Metals Company. William W. Acuff has been appointed regional manager for the eastern region, building products division of the company, with offices at 19 East 47th Street.

**Los Angeles Calif.**—Detrex Corporation. A new and larger office and warehouse has been opened at 625 South Anderson Street.

**Chicago Ill.**—The H. K. Ferguson Company. A new sales office has been established at 120 S. LaSalle Street, managed by L. Douglas Lacy.

**New York N. Y.**—The Upson Company. H. Roy Walton has been named assistant eastern sales manager, a newly created position. He will have his headquarters together with H. E. Oesterreich, eastern sales manager, at 101 Park Avenue.

**Denver, Colo.**—Chase Bag Co. J. P. Widlar has been assigned as manager of the



J. P. Widlar

R. G. Bullock

company's Denver sales office. He replaces R. G. Bullock, who has assumed the position of sales manager of the Chase Milwaukee branch.

**Philadelphia, Pa.**—The Electric Storage Battery Company. Roland Whitehurst, Exide sales manager, has been elected vice-president in charge of sales. Mr. Whitehurst has been in the employ of the company for 40 years. Frank T. Kalas has retired as vice-president in charge of sales, and director, after 49 years service with the company. Carl F. Norberg, vice-president in charge of manufacturing has been elected a director to fill the vacancy caused by the retirement of Mr. Kalas.

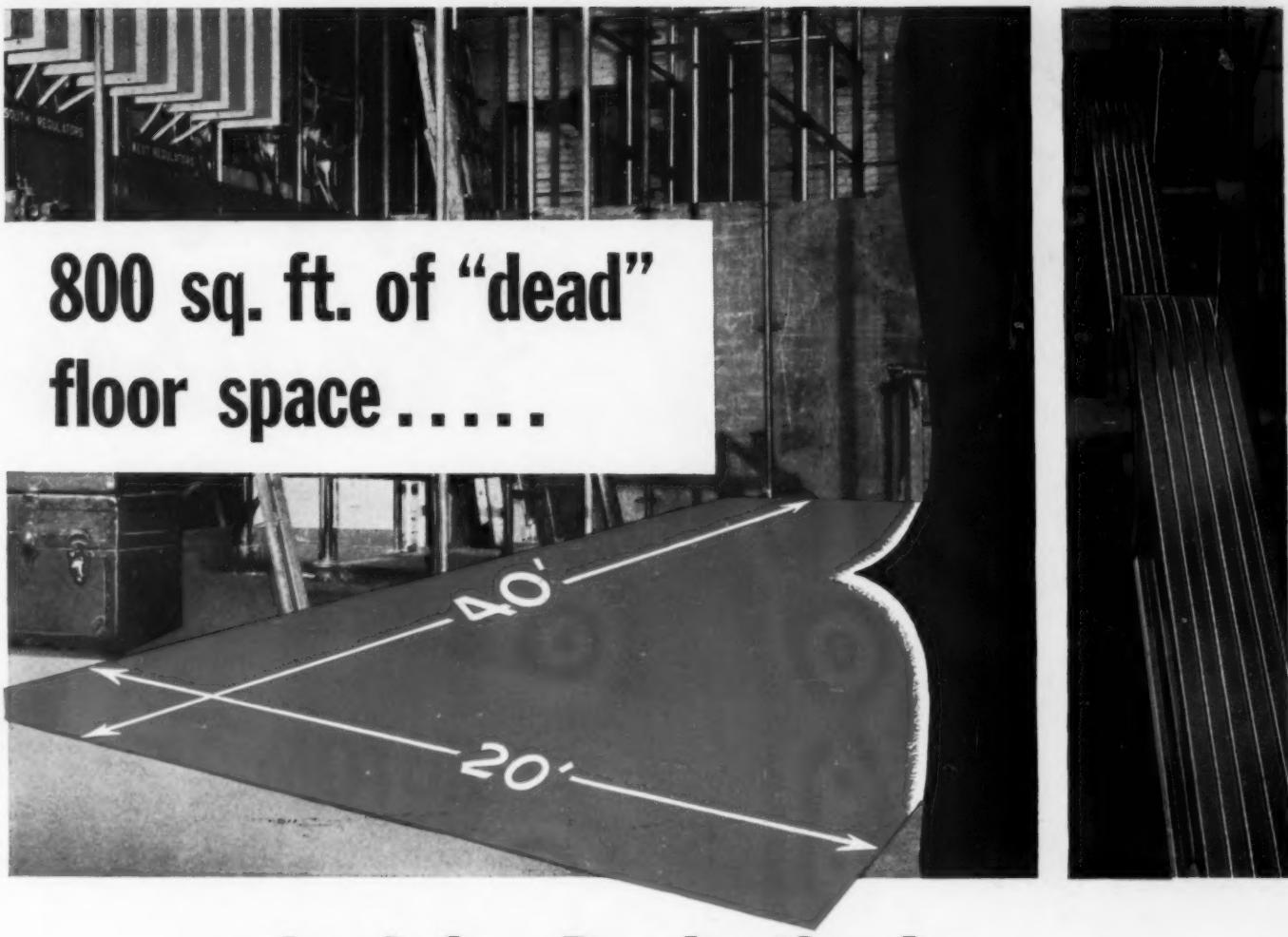
**Philadelphia, Pa.**—The Ideal Electric and Mfg. Co. Philadelphia Electrical and Machinery Company, 1772 North Front Street, has been named distributor in this area.

**Detroit, Mich.**—Reynolds Metals Company. L. D. Yager has been named division manager of the Detroit sales office, aluminum division, and industry manager automotive division.

**Bryan, O.**—Aro Equipment Corporation. Ralph W. Morrison has been appointed general sales manager.

**Phoenix, Ariz.**—Ampco Metal, Inc. Arizona Welding Equipment Company has been named as distributor outlet.

(Please turn to page 280)



## 800 sq. ft. of "dead" floor space . . . .

## . . . revived for Production!

Increased production at the Wagner Electric Corp., St. Louis, Mo. called for the installation of a new bank of voltage regulators in the power house. Where to put them was the stopper. Enlarging the building was out of the question. Floor space was already at a premium . . . except for the area occupied by two 38-foot center belts driving the present generators.

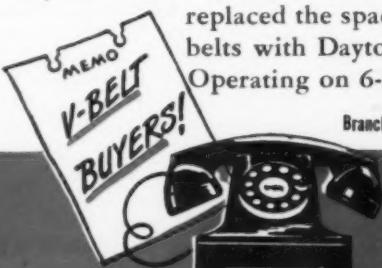
The plant engineer with the help of his local Dayton V-Belt Distributor redesigned the drive, replaced the space consuming flat belts with Dayton V-Belt Drives. Operating on 6-foot centers, they

required only half the area, 800 sq. ft. of dead space was revived...more than enough for the regulators.

Of added importance, generator starting current is 10 to 15 amperes lower. No warmup time is needed. Belt slippage is eliminated and maintenance reduced to a minimum.

Dayton V-Belts can bring new operating economies to your plant. Your local Dayton V-Belt Distributor is as near as your telephone. He has the specialized knowledge to help you select the right belt for the right job. And he can service you immediately . . . right from stock. Call him today. *Dayton Rubber, Dayton 1, Ohio.*

Branch Offices: Atlanta, Boston, Chicago, Cleveland, Dallas, Detroit, Los Angeles, Minneapolis, New York, Philadelphia, St. Louis



V-Belt Buyers! A leading mill supply house near you offers specialized Dayton V-Belt service. Look for the name under the trade name heading "Dayton V-Belts" in the yellow pages of your telephone directory.

**Dayton Rubber**  
THE MARK OF TECHNICAL EXCELLENCE IN NATURAL AND SYNTHETIC RUBBER

# He simplifies He uses



Clean, compact design is one of the most attractive features of Albertson portable tools. For this, small-motor standardization gets more than a small share of the credit. Here's the way Mr. G. A. Olsen, chief engineer of the Albertson Co. feels about it. "I simplify design," he says, "when I specify series-motor parts with NEMA standard dimensions. By designing tool housings to take parts conforming to these standards, I simplify case construction, obtain interchangeable motor design and lower overall engineering costs."

## More for your money with STANDARD



## Fractional-Horsepower MOTORS

GENERAL ELECTRIC is now producing *definite-purpose* motors, such as washing-machine motors, sump-pump motors, hermetics and the others shown below, as well as 11 types of general-purpose motors. These are being made in *standard designs*. Ratings, performance standards, dimensions, and special features (such as type of enclosure, bearings, etc.) follow the standards worked out by the National Electrical Manufacturers Association in conjunction with your industry associations. Thus, you get all the advantages of standardization and—over 1600 G-E standard motors to choose from.

**A Recent Bulletin You'll Want.** A brief, but concise G-E bulletin tells what the standards are and how they are

applied. Ask your local G-E office for Bulletin GES-3565 or write *Apparatus Dept., General Electric Company, Schenectady 5, N. Y.*

**Lower Prices are Proof.** Increased production costs made it necessary for General Electric to adjust its prices upwards in June of 1948. However, prices on fractional horsepower motors are still 5% lower than they were in December, 1947 due to two successive price reductions in 1948 both of which were direct results of the standardization program. With fewer motor types to build, G.E. has been able to concentrate on those motors most widely demanded. The resulting savings are passed along to you and your customers as worthwhile price reductions.



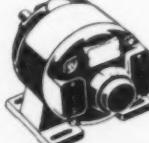
Unit-Bearing Fan



Washing Machine



Oil Burner



Machine Tool



Gas Pump



Hermetic Refrigeration

# design

## STANDARD



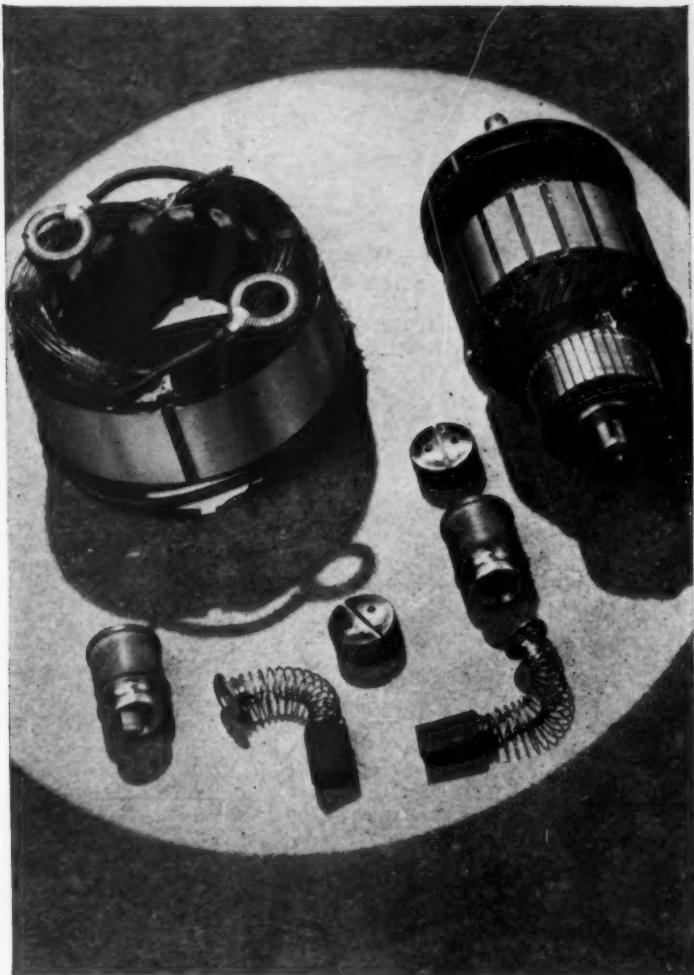
## SERIES MOTOR PARTS

General Electric offers all manufacturers of portable tools, business machines, and small appliances a complete line of fractional horsepower series motor parts tailored individually to meet a wide variety of requirements. These series motor parts are composed of standardized components—brushes, commutators and laminations, with shafts dimensions and performance modified to meet special needs. With these standardized components, device manufacturers save on engineering time and motor costs.

These motors are classified in two principal groups:

**Heavy Duty Parts**—A complete line to stand up under rugged service, featuring high efficiency and good speed regulation. Primarily for portable tools such as drills, saws, and sanders, they have extra features to withstand heavy short-duration overloads and high light load speeds.

**Normal Duty Parts**—In smaller sizes and for more uniform loads than the heavy duty parts. Made especially for such devices as vacuum cleaners, blowers, mixers, and small floor polishers, where good performance and reliability are



essential, but where not all the extra features in heavy duty parts are needed.

### Important Construction Features of G-E Series Motor Parts

**Commutator**—Precision built, strong, and accurately finished to operate quietly and have long life. **Commutator Leads**—Firmly staked in commutator bars, soldered, and secured for maximum protection against breakage. **Armature**—Carefully wound and insulated to meet specifications. Balanced for smooth operation, fan cooled for long life. **Field Assembly**—Standardized dimensions closely maintained for easy assembly in customer's device. Insulated windings anchored in the lamination assembly have flexible leads to facilitate connections. **Brush Assemblies**—Made from scientifically selected materials which assure long service, protect commutator surfaces, and give excellent commutation.

For further information on G.E. series motor parts, write for Bulletin GEA 1942. Apparatus Dept., General Electric Co., Schenectady 5, N. Y.

GENERAL ELECTRIC

700-92



Belted Fan



Coal Stoker



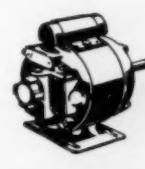
Jet Pump



Shaft-Mounted Fan



Sump Pump



General Purpose

# WINNING POWER!



## WISCONSIN HEAVY-DUTY *Air-Cooled* ENGINES

Four of a kind — winning power to spare in this hand! The same winning power you draw when you specify Wisconsin Air-Cooled Engines for your equipment . . . compact, heavy-duty singles in two types ranging from 2 to 9 hp.; twin-cylinder models from 7 to 13 hp., and V-type 4-cylinder engines from 15 to 30 hp.

All models are designed for heavy-duty service — delivering "Most Hp. Hours" of on-the-job service.

All models are extremely compact . . . to fit the machine as well as the job.

All models are built to one standard of top-quality excellence in design, materials and precision construction.

For "Winning Power", specify Wisconsin Air-Cooled Engines. Engineering data gladly supplied.

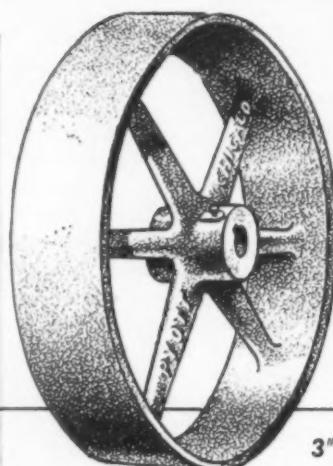
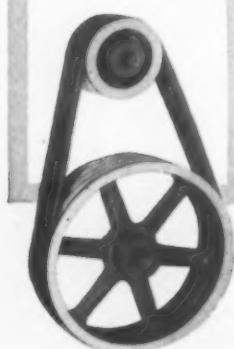


### WISCONSIN MOTOR CORPORATION

World's Largest Builders of Heavy-Duty Air-Cooled Engines  
MILWAUKEE 14, WISCONSIN

For accurately balanced SHEAVES and V-Belt Drives

CALL ON PYOTT



CALL ON  
**PYOTT**  
for Cast Iron  
**PULLEYS**

3" to 102" DIAMETERS

Pyott can meet your cast iron pulley requirements promptly. Available types include split and solid hub, single and multiple arm, wide and narrow face, flanged, tapered and step cone as well as tight and ball bearing loose pulleys. All are perfectly balanced and may be operated at running speeds up to 6000 FPM, depending on diameter and type of pulley. Pyott Cast Iron Pulleys are machine molded up to 72" diameter and 24" face width. Larger sizes or unusual designs floor molded, requiring no patterns from pulley user. With your inquiry, send a dimensional sketch and indicate your delivery requirements.

Catalog available on request

**PYOTT FOUNDRY & MACHINE CO.**

Established 1896 • 328 N. Sangamon St., Chicago 7, Illinois

## INDUSTRIAL DEVELOPMENTS

The Buda Company, Harvey, Ill., has acquired the W. F. Hebard & Co., 336 West 37th Street, Chicago, Ill., manufacturers of materials handling equipment, including "Shop Mule" tractors and life trucks. W. F. Hebard & Co. will be operated as a wholly owned subsidiary of The Buda Company.

Goodyear Tire & Rubber Company, Akron, O. has announced plans for a 50% conversion of its synthetic rubber manufacturing facilities for the production of "cold" rubber. The company has been authorized by the Reconstruction Finance Corporation to increase or convert present manufacturing facilities to produce 45,000 long tons of the material annually.

Continental Can Company has licensed the Wheelco Instruments Company, Chicago, Ill. to manufacture the Kurek Solder Analyzer, a rapid method for determining the tin content of tin-lead solders.

Monsanto Chemical Company is completing additional furnace facilities for the production of elemental phosphorous at Monsanto, Tenn. Output of the plant will be increased nearly 50%. Full production is expected to be achieved by January 1, 1949.

The General Detroit Corporation has begun manufacturing operations in its new plant in Windsor, Ontario, Canada. The company manufactures a complete line of portable fire extinguishers, safety cans, fire hose, etc.

Bausch & Lomb Optical Company has announced that the Riggs Optical Company, San Francisco, Calif., an affiliated distributor since 1926, has consolidated with it. The new organization will be known as Bausch & Lomb Optical Company, Pacific Division, with district offices in San Francisco, Los Angeles and Portland, Ore.

Columbia Steel Company, subsidiary of the United States Steel Corporation, has taken possession from the War Assets Administration of the site of its future cold reduction sheet mill in the Los Angeles, Calif. district. The site consists of more than 200 acres of land and various buildings which were used to house an aluminum plant during the war.

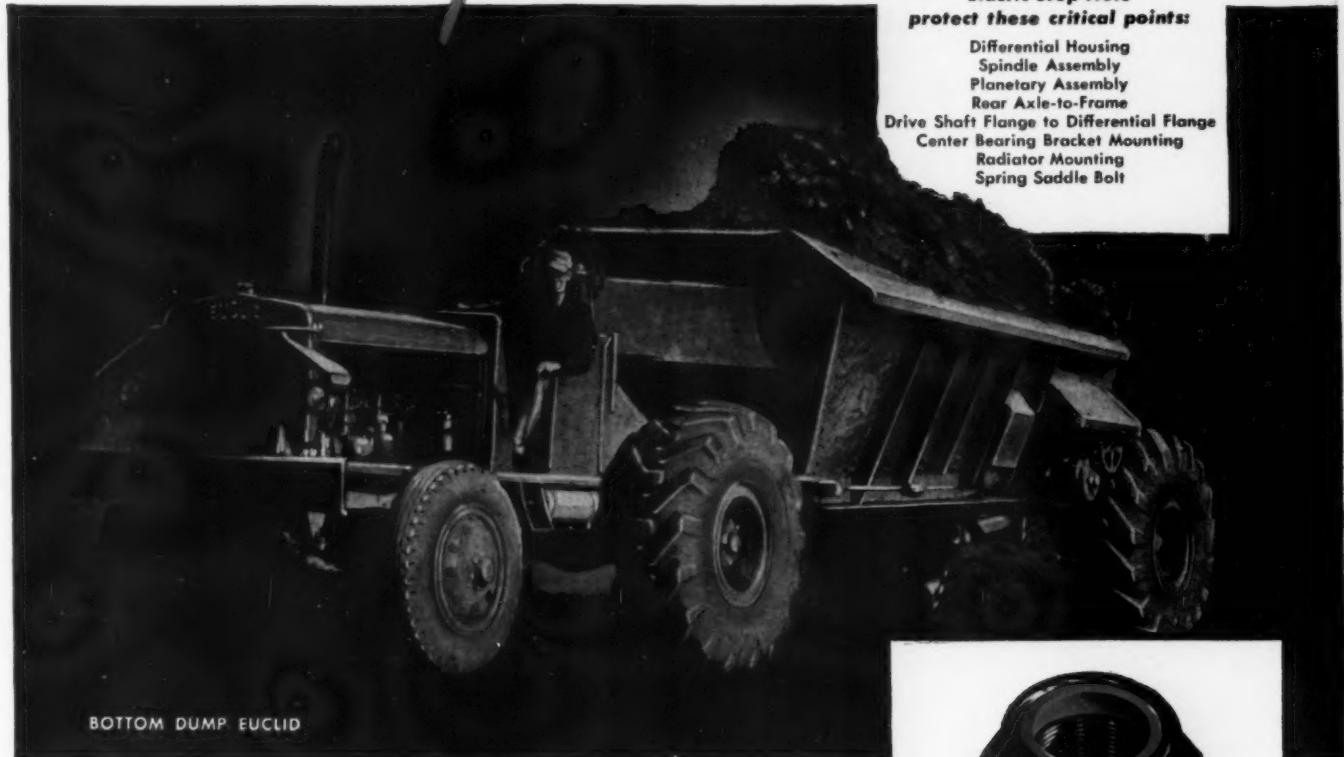
McLouth Steel Corporation, manufacturer of strip steel, has purchased a 210-acre tract of land on the Detroit River in the village of Trenton, Mich. and is building a completely integrated steel mill. The company has also purchased from the War Assets Administration a new electric furnace ingot plant constructed for the government at Indiana Harbor, Ind., during the war. The plant will be dismantled and moved to Trenton.

(Please turn to page 284)

## FASTENER PROTECTION

# Built for Punishment

## ON OFF-THE-HIGHWAY HAULS



BOTTOM DUMP EUCLID

—*the Red Elastic Collar absorbs heavy-duty loading and carting SHOCK! IMPACT!*

The jarring thuds of earth, ore, sand, gravel when loading . . . the constant shock and vibration of a 20-ton load over rough off-the-highway hauls are just two of the regular occupational hazards encountered in the daily life of a Bottom Dump Euclid.

Obviously, this constant impact calls for bolted connections that will prevent costly, time consuming operational failures. Elastic Stop Nuts were the logical choice. The self-locking, self-sealing Red Elastic Collar of these reusable nuts retains its dependable grip . . . no amount of shock or vibration can shake

these nuts loose.

Elastic Stop Nuts not only protect against vibration, but the Red Elastic Collar also keeps bolt and nut threads rust-free . . . does not gall bolt threads . . . and permits easy removal for replacement and repair.

**Here's a Challenge:** Send us complete details of your toughest bolted trouble spot. We'll supply test nuts—FREE, in experimental quantities. Or, if you want further information, write for literature.

Elastic Stop Nut Corporation of America, Union, N. J. Representatives and Agents are located in many principal cities.



## ELASTIC STOP NUTS



INTERNAL  
WRENCHING



ANCHOR



WING



SPLINE



CLINCH



GANG  
CHANNEL



NYLON  
CAP

OVER 450 TYPES AND SIZES IMMEDIATELY AVAILABLE FROM STOCK

# 3 HANDEES COVER the FIELD

TOOLS OF 1001 USES GRIND, DRILL, POLISH,  
ENGRAVE, CUT, CLEAN, SAW, CARVE, etc.

For work on metals, alloys, wood,  
plastics, stone, horn, bone, etc.  
Plugs in any AC or DC socket.

## HANDEE 44

A good production tool. Has everything — speed, power, versatility and pencil-point precision. Constantly cooled by forced air, the 44 runs cool and smooth all day long. Weighs 2 lbs., 8½" long, 20,000 r.p.m. \$31.50. In wood carrying case with accessories \$42.50.

## HANDEE Hi-Power

A big fellow. Fast, powerful, sturdy, for continuous work. Has ample power to drive a 2½" diameter wheel. Weighs 3 lbs., 10" long, 17,000 r.p.m. In case with assortment of accessories \$42.50.

## HANDEE

First tool of this type and today's finest. For precision work. Also gets into hard-to-reach places to make repairs on machinery. Weighs 12 oz. 6½" long. 25,000 r.p.m. With 7 accessories \$20.50. Handee with 40 accessories in carrying case \$27.50.

## CHICAGO ACCESSORIES

Grinding and mounted wheels, sanders, steel cutters, etc.—the most complete line to fit any power tool—over 500 of finest quality—all made in our own plant.

*Handee Tools and Accessories are in stock in principal industrial areas. Write for Catalog.*

Send Handee 44 Name .....  
 Hi-Power .....  
**CHICAGO WHEEL & MFG. CO., 1101 W. Monroe St., Dept. PG, Chicago 7, Ill.**

Handee .....  
 Remittance enclosed Address .....  
 Send C.O.D. .....  
 Send Catalog .....

The Westinghouse Electric Corporation has announced its decision to purchase the 57-acre Sunnyvale, Calif. works which was leased 19 months ago from the Joshua Hendy Iron Works.

The Hinde & Dauch Paper Company, manufacturers of corrugated fibre shipping boxes and packing materials in Richmond, Va., has purchased land on Petersburg Pike for the construction of a new corrugated box factory.

Hughes-Keenan Corporation, manufacturers of Roustabout cranes, are moving their plant to Delaware, O.

Bausch & Lomb Optical Company have begun installation of equipment at their new lens plant in Midland, Ontario, Canada.

Lectrohm, Inc., manufacturer of vitreous enamel resistors and electric solder parts has moved its plant to the Clearing industrial district in the southwest side of Chicago.

Irvington Varnish & Insulator Company has completed a new processing plant on Newark Bay, Newark, N. J., costing in excess of \$2,000,000. One division of the plant will manufacture "Cap-seal" liners for bottle caps, while the other will process cashew nut shell oil into a number of commercial and industrial products.

Viking Products Company, Inc., 2373 E. Eight Mile Road, Detroit, Mich., a new company organized to produce automatic air valves, has announced completion of its developmental program and installation of equipment for mass production at its Vicksburg, Mich. plant.

United States Rubber Company has announced that the synthetic rubber plant operated by them for Reconstruction Finance Corporation in Naugatuck, Conn., the only synthetic rubber plant in New England, is being equipped to produce the new cold rubber which gives 30% longer tread wear in tires.

Continental Can Company's new fibre drum plant, located in Tonawanda, N. Y. began production of "Leverpak" shipping drums on November 15.

Johns-Manville Corp. has built a new plant at Tilton, N. H. to manufacture an entirely new line of products, Quinterra electrical insulation and other related items.

Elgin National Watch Company has announced that its Sapphire Products Division, located in Aurora, Ill. is now known as the Industrial Products Division. In addition to industrial sapphire products, the division now carries a line of diamond finishing compound, and a third line, precision products, is now being added.



**Available in Grades  
to suit your needs**

Allegheny Ludlum High Speed Drill Rod in these specially-processed smaller sizes is available to you in all types of High Speed Steels, as well as high carbon-high chrome Die Steel types. You can get the grade you're used to, plus better results—why not investigate its possibilities?

**ADDRESS DEPT. P-70**

Do you use High Speed Drill Rod in the smaller sizes? If so, here's an Allegheny Ludlum development that you can translate into real advantages—longer tool life, better performance, greater production.

A-L now *hot-draws* these small sizes by a special process, instead of cold-drawing with its repeated passes and anneals—each of which takes something out of the steel. The result is: a high degree of hardness, obtained with fine grain size, and with small, evenly distributed carbides for keen cutting edges; plus maximum toughness in the hardened and tempered condition.

By actual test,  $\frac{1}{8}$ " hot drawn High Speed Drill Rod at 64 Rockwell C is as much as 18% tougher than cold drawn at the same hardness. • But the best test is to *try* this Drill Rod—

prove its merits for yourself. Check with your local Allegheny Ludlum Branch Office or distributor.

**ALLEGHENY  
LUDLUM**  
STEEL CORPORATION  
Pittsburgh, Pa.

**TOOL STEEL DIVISION: DUNKIRK, N. Y.**

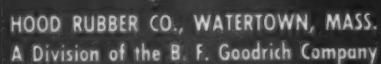
*Fine Tool Steels*  
*Since 1854* W&D 1778



## FOR SAFETY PLUS



For better rubberized Work Gloves, look for the HOOD Trade Mark — a sign of quality since 1896. Styles to suit every requirement. Send for folder. Order from your jobber.



HOOD RUBBER CO., WATERTOWN, MASS.  
A Division of the B. F. Goodrich Company

## ARMSTRONG-BRAY



### The Correct Fastener for Any Belt

There is a best type of fastener for every type of belting, for every load, for every working condition. That is why ARMSTRONG-Bray makes not one but all approved and accepted types: WIREGRIP Belt Hooks, STEELGRIP Belt Lacing, PLATEGRIP Belt Plates (for joining and repairing heavy conveyor belts) and SUREGRIP and FLEXGRIP couplings for Round Belting. Standardize on ARMSTRONG-BRAY products and have the right fastener for each application.

Write for Catalogue

ARMSTRONG BRAY & CO.  
5368 Northwest Highway, CHICAGO 30, U.S.A.

"DOESN'T THIS  
STENCIL BOARD  
EVER WEAR OUT?"

CENTRALINE  
**STENCIL**  
BOARD

Yes, the new Centraline Stencil Board does "wear like iron" — it will not become brittle with age — it cuts cleaner and sharper. The new exclusive treatment impregnates the paper — stabilizing and retaining its cutting, stencilling and wearing qualities indefinitely.

No old type stencil board can match Centraline for performance, long life and low stencilling cost.

WRITE TODAY FOR A FREE, GENEROUS SAMPLE — TRY IT IN YOUR OWN SHIPPING DEPARTMENT.

**CENTRAL PAPER COMPANY INC.**

2446 LAKESHORE DRIVE • MUSKEGON, MICHIGAN

BRANCHES IN LEADING CITIES



## New England Purchasing Conference

(Continued from page 107)

Wilson B. Wight, Purchasing Agent, Bausch & Lomb, Rochester, N. Y., and chairman of the Development Committee on "How to Buy", was the next speaker. He explained the program being developed by the National Education Committee of the N. A. P. A. He was introduced by Daniel G. Donovan, President of the N. E. P. A. A., and Chairman of the Educational Committee of District No. 9.

Mr. Wight reviewed the program of the six development committees of the National Education Committee in the development of purchasing literature, educational courses for local associations, courses for use in schools and colleges, visual education (four films now available), intracompany training, and the "How to Buy" program. He also told about the course in "Commercial Engineering for Purchasing Personnel" presented at the Rochester Institute of Technology by the Purchasing Agents Association of Rochester. The course was developed in recognition of the need for an appreciation of tools and techniques by potential buyers and purchasing agents. In all laboratory and shop work, the aim is to acquaint students with what tools do and their limitations, rather than to train them in their operations.

The concluding feature of the business sessions was a panel analysis of questions submitted by members. The chairman of the panel was Eugene D. Emigh, Jr., Purchasing and Stores Supervisor, United Illuminating Company, New Haven. Members of the panel were George A. Renard, Executive Secretary of the N. A. P. A.; William C. Hoffman, Assistant Purchasing Agent, Pacific Mills, Boston; F. C. P. Drummond, Purchasing Agent, Lonsdale Co., Providence; T. E. Pierce, Purchasing Agent, United States Envelope Co., Springfield; G. T. Zahnke, Purchasing Agent, Wallace Barnes Co., Bristol, Conn.; and George E. Henry, associate editor of PURCHASING Magazine, New York.

Answers to various questions presented to the panel were to the effect,

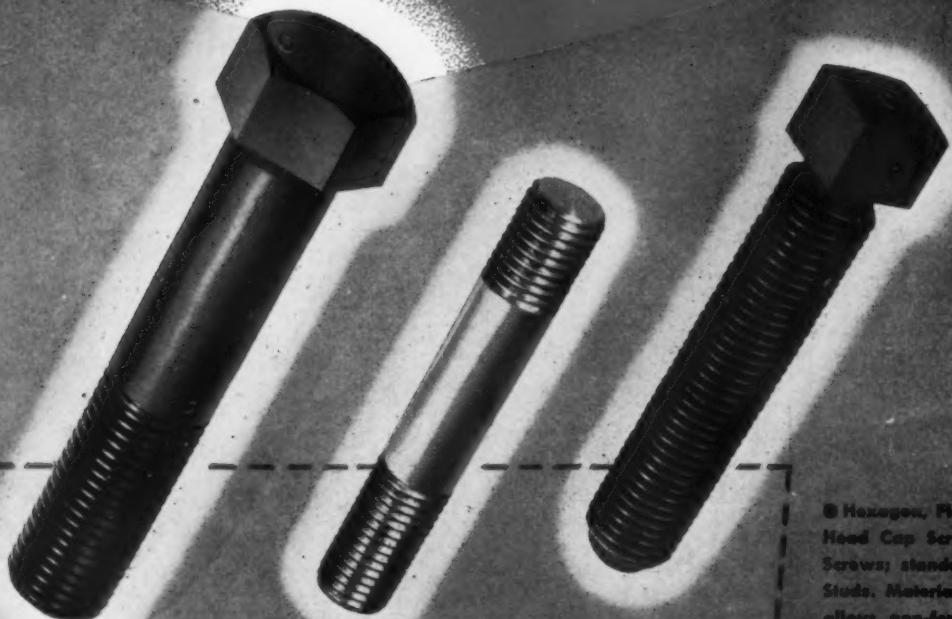
That the yardstick most generally used in determining the value of bituminous coal, was the btu content of the coal, though consideration should also be given to the character of the plant involved, and its physical condition;

That the price trend for insulating cotton yarn for the balance of this year and the first quarter of 1949, apparently is downward;

That sooner or later zone pricing (Please turn to page 288)

# CLEVELAND *Top Quality* FASTENERS

## bring you the advantages of specialization



• Hexagon, Flat, Pillister and Square Head Cap Screws; Square Head Set Screws; standard and special Milled Studs. Materials used: carbon steels, alloys, non-ferrous.

● From the beginning of our operations 30 years ago our aim has been directed toward making the *best fasteners possible* in a restricted list of types. All our manufacturing facilities and skill today are concentrated on Top Quality *Cap Screws, Set Screws and Milled Studs*—with some capacity devoted to parts of special design required by our customers. This specialization is your assurance that Cleveland Fasteners meet the highest standards specified in this field. Write for folder explaining double extrusion process used in Cap Screw production.

Originators of the modern cold-forging method that produces stronger more uniform fasteners by . . .

**DOUBLE EXTRUSION** *the KAUFMAN Process*

**CLEVELAND**  
*Top Quality*  
**FASTENERS**

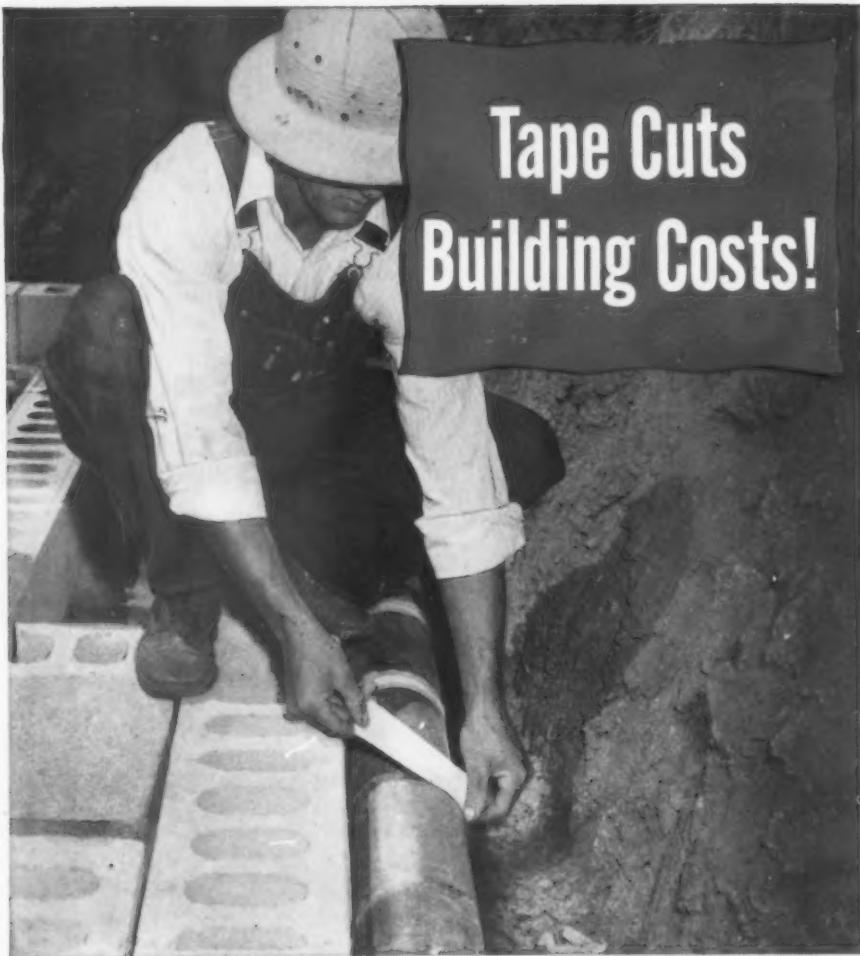
*The Cleveland Cap Screw Company*

2917 EAST 79TH STREET • CLEVELAND 4, OHIO

SPECIALISTS FOR 30 YEARS IN CAP AND SET SCREWS AND MILLED STUDS

Warehouses: Chicago and Philadelphia

Ask your Jobber for Cleveland Fasteners



## Tape Cuts Building Costs!

### Bauer & Black "Specific Tapes for Specific Uses" can Cut PRODUCTION Costs for YOU!

MANY BUILDERS are saving money with Bauer & Black Industrial Adhesive Tape No. 113 as a binder for tile drainage pipe connections. Thanks to No. 113, less material, labor and machinery are needed.

OTHER Bauer & Black "Specific Tapes for Specific Uses" save production costs in industry, help make products better. From jet engines to crude oil, from stoves to plate glass, actual savings with tape range from 5 to 85% over conventional materials, depending on the application.

#### ARE YOU SAVING MONEY WITH TAPE?

Whatever your product, you ought to find out how the right Industrial Adhesive Tapes may save you money, speed production or improve what you make. Just write Dept. 9-12 today for our free catalog.

Products of

# BAUER & BLACK

Division of The Kendall Company, 2500 S. Dearborn St., Chicago 16

## Industrial Adhesive Tape

P R E S S U R E S E N S I T I V E

Production Short Cuts to Reduce Costs • Research to Speed and Improve Methods

### New England Purchasing Conference

(Continued from page 286)

now in effect on many commodities may also be eliminated, along with basing point price systems, depending upon legislative action that may be taken by Congress on basing point pricing;

That the present national stockpiling program is under control of the armed forces, and the material will not become available to industry except by act of Congress, perishable materials being turned over as necessary, and replaced to avoid loss incident to spoilage;

That the purchasing department is best qualified to dispose of surplus machinery and scrap;

That under present conditions in the steel industry, it is yet too early to gauge the future effect of the elimination of the basing system on the New England metal market;

That subsidies and parity prices should be carefully analyzed, and opposed unless definitely in the public interest, or required from the standpoint of national welfare;

That sales and technical representatives should not be permitted in plants without previous screening by the purchasing department; and

That unit prices should be shown on purchase orders, but not extensions.

The Conference was concluded with the annual banquet at which Joseph C. Andrews, Conference General Chairman, presided. The banquet speaker was Dr. G. Keith Funston, President of Trinity College, Hartford, who discussed current issues affecting higher education. There was added interest in his remarks by reason of the fact that prior to taking over his present position, Dr. Funston served as Director of Purchases for the Sylvania Electric Company.

1 1 1

### How We Use What We Buy

(Continued from page 89)

"know how" will be quick to see the possibilities of a product presented to him by a salesman calling at the plant and will either relay the information to proper parties or accompany the caller for further discussion with interested department heads. Sales organizations are rapidly recognizing that purchasing is a profession and that the N.A.P.A. has helped to make it so. Knowing this, they have done a great deal to aid the growth of the N.A.P.A.

(Please turn to page 290)



**"XLS" BALL BEARING**  
Norma-Hoffmann Extra Light **XLS** ball bearings are available in a size range from  $1\frac{3}{8}$ " to  $22\frac{1}{2}$ " bore and a maximum of 28" diameter.

Crowded  
for Room?

## **NORMA-HOFFMANN**

### EXTRA LIGHT XLS SERIES

#### **Precision Bearings Provide greater latitude in designs**

These Norma-Hoffmann *Extra Light* Precision Ball Bearings—**XLS** types—provide the solution to cramped bearing space in machine design. In addition to the advantages of low friction, compactness and light weight, the abnormally large bores, compared to outside diameter, give designers greater latitude in designs of their equipment. They are also suitable for combined radial and thrust loads in either direction. Investigate Norma-Hoffmann *Extra-Light* Precision Bearings for your designs. Our Field Engineers will gladly aid you in the application and selection of the proper bearing for your particular designs. Write for their services and catalog.

**NORMA-HOFFMANN**  
*Precision* **BEARINGS**

BALL • ROLLER • THRUST

NORMA-HOFFMANN BEARINGS CORPORATION,  
STAMFORD, CONNECTICUT

FIELD OFFICES: New York, Chicago, Cleveland, Detroit,  
Pittsburgh, Cincinnati, Los Angeles, San Francisco, Portland, Ore.,  
Seattle, Phoenix.

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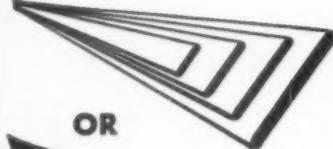
*Stainless Steel*

# WIRE

ROUND



FLAT



OR



SHAPED

### **Page for Wire— Especially Stainless**

Remember that the next time you are looking for a responsible source for stainless steel wire. Wire has always been the business of PAGE. And PAGE has been working with stainless ever since its earliest development.

Whatever problem you may have involving wire—

*Get in touch with Page!*

**ACCO**

Monessen, Pa., Atlanta, Chicago, Denver,  
Detroit, Los Angeles, New York, Pittsburgh,  
Philadelphia, Portland, San Francisco,  
Bridgeport, Conn.



PAGE STEEL AND WIRE DIVISION  
AMERICAN CHAIN & CABLE

In Business for Your Safety

### **How We Use What We Buy**

(Continued from page 288)

Frequently, the problems of procurement will be lessened if the buyer knows product uses well enough to suggest substitutes. Substitutions are of the utmost importance in these days of scarcities and inflationary prices. If 1926 is used as a normal base year, price increase percentages in a few important commodities are as follows: Livestock 157%; Vegetable Oil 139%; Building Materials 136%; Fuels 71%; Ferrous Metals 67%; Non Ferrous Metals 64%; Paint Materials 64%; Industrial Products 75%; Paper & Pulp 72%. A glance at these percentages of increase will show that "Now" is the time to explore the use of possible substitutes; "Now" is the time for a Purchasing Agent to assist his company in the battle against increased costs.

There is still another advantage of knowing plant operation thoroughly. By having a clear picture of the materials and equipment used, a Purchasing Agent can quickly pick out important features of other plants observed while calling on suppliers or on Association plant visits, and bring them home to his own organization. Here again, the practical knowledge of the Purchasing Agent enables his company to produce better quality goods at cheaper cost.

This plant experience is a common topic of conversation when purchasing men get together on various occasions. An intimate familiarity with their jobs and related problems makes such conversations profitable. Invariably, this exchange of ideas provides very satisfactory results for all concerned.

A great deal of constructive work in this direction is now being accomplished by the National Educational Committee of N.A.P.A. on "How to Buy". When this program is completed, it will be of the utmost importance and usefulness to all Purchasing Agents, for it will record on paper the commodity knowledge of some of the best informed men in the entire purchasing profession.

As every Purchasing Agent well knows, the basic aim of executive purchasing is to adopt policies and procedures which will produce the right materials at the best price obtainable, and have them on hand when needed. There is no better way of doing this than by combining the N.A.P.A.'s forthcoming "How to Buy" information with personal knowledge of "How We Use What We Buy".

# Sawyer's

## PROTECTIVE WEAR

*stays Pliable!*



100% waterproof Neoprene\* has been added to Sawyer's famous LIGHTHOUSE Brand of protective wear. Roomier and lightweight, Neoprene garments are soft, pliable . . . and they stay pliable no matter what the weather! Resist most acids. They're built to give comfortable stormy weather protection through many years of hard wear. Complete range of sizes — black or yellow.

\*Reg. T. M. of E. I. duPont deNemours & Co

### **ANOTHER NEW FAVORITE!**

Another recent addition is Sawyer's Hycar\*\* Aprons! Already LIGHTHOUSE Brand favorites, these aprons are light and tough—resist most acids, have no cumbersome reinforcement. Two lightweight styles (ideal for women!) have waist tie tapes only; the heavier apron, four grommets. Tapes go under hem to give greater strength.

\*\*American Rubber Hycar is a product of  
B. F. Goodrich Chemical Company

**The H. M. SAWYER & SON COMPANY**  
CAMBRIDGE, MASSACHUSETTS



# **P the Power**

**to move Mountains of Freight**

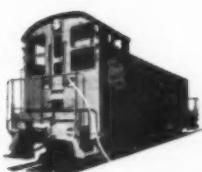
**YOURS ON THE *Katy***



**NEW MERCHANDISE CARS**  
...hundreds of them, augment  
Katy's fleet of heavy cargo  
transportation.



**NEW HOPPER CARS**  
...available for quick, efficient,  
versatile service to shippers.



**NEW DIESEL POWER**  
...to expedite transfer of your  
freight at major terminals—  
and road haul it with speed  
and economy.

**SMOOTH DIESEL POWER**...to deliver your goods in perfect condition. High-speed power that permits scheduling to suit your every shipping need.

**DIESEL POWERED SWITCHERS**...at important terminals to expedite the transfer of your carloads to markets and factories.

**RADIO POWER**...a magic service PLUS to speed handling of your freight.

Katy's equipped for even heavier, longer hauls, smoother handling of your shipments—dependable, on-time service between Texas and Oklahoma and the North. For careful, precision shipping to and from the Southwest...ship KATY!

**MISSOURI-KANSAS-TEXAS LINES**

**Ship Via The Southwest's Main Supply Line**

**KATY BULLET**

Daily from Kansas City and St. Louis  
to all main Southwestern points.

**KATY KOMET**

Katy's fastest—Southbound daily from  
St. Louis to all main-line points.

**KATY KLIPPER**

Daily, St. Louis and Kansas City  
to Oklahoma and Texas.

**KATY PACKER**

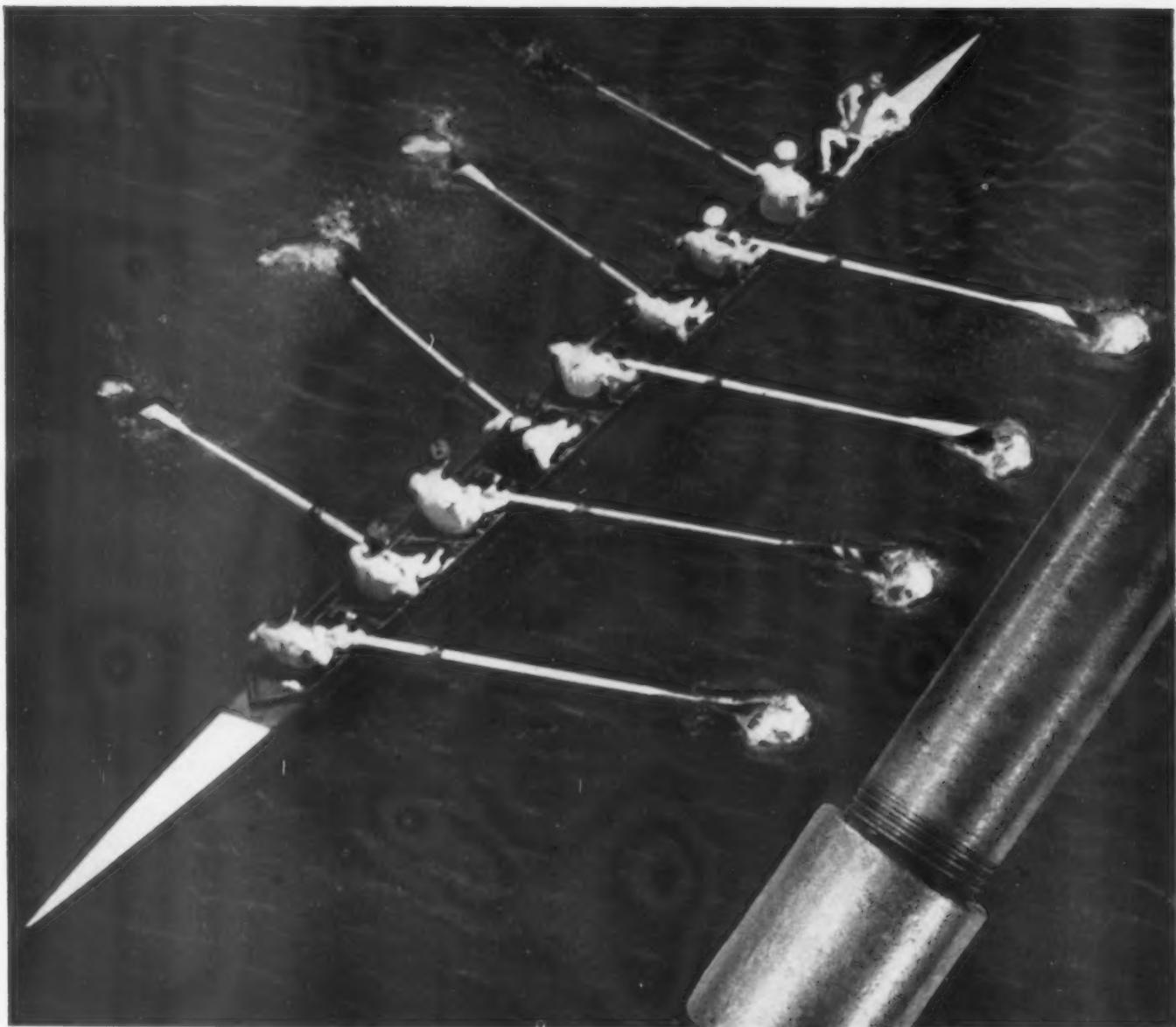
Northbound daily, Fort Worth to  
Kansas City and St. Louis.

**"72" FAST FREIGHT**

Daily from Texas and Oklahoma  
to Kansas City and St. Louis.

Also... Convenient Double Daily Service between St. Louis and Kansas City.





# Fast Clip

WHEATLAND STEEL PRODUCTS COMPANY,  
Bankers Securities Bldg., Philadelphia 7, Pa.

Gentlemen:

Please send to me at once the colorful new Wheatland price list  
on black and galvanized Steel couplings.

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_

precision couplings by

**Wheatland**  
**STEEL PRODUCTS**  
**C O M P A N Y**

Bankers Securities Building  
Juniper & Walnut Streets • Phila. 7, Pa.

## What Management Expects of Purchasing Department

(Continued from page 101)

of the entire economic history of the more important things he buys. This information should be recorded and on hand in the department at all times. To be in a position to supplement the cold statistics and specifications with personal impressions is of great supplementary value to the purchasing agent.

### Public Relations

A final comment with respect to the relations of the purchasing department with outsiders revolves about the public relations aspects of the purchasing function. The entire department must recognize that the purchasing function carries broad public relations aspects for the company, and the conduct of the department's activities should be governed accordingly. To many outsiders and firms, the purchasing agent is the company and, as we all know, impressions gained through contacts with any individuals or departments who are seen many times over become highly significant in the transmission of the company's good name afield.

External professional contacts are an important part of the head purchasing agent's work especially. Such things as membership in the appropriate professional societies, like the National Association of Purchasing Agents, service upon the American Meat Institute Purchasing Committee when called upon, and similar assignments are desirable and beneficial to all parties concerned. And, finally, occasional community and civic service when called upon as a company representative is important for the purchasing agent to engage in on a moderate basis, even though this cannot always be directly related to the function of purchasing. It is widely agreed today that the importance of a company's engaging in civic and community activities is increasing daily. The purchasing agent, as well as all other officials and department heads, should have his responsibilities organized well enough so that he can have some time available to partake in worthy civic affairs as a representative of his company.

### Management's Responsibility

The emphasis in these remarks has been directed toward the expectations by management of performance on the part of its purchasing department. Before closing, I feel that a word or two regarding the expectations by the purchasing department of perform-

(Please turn to page 294)

Plants and Main Office of Erie Bolt & Nut Co., Erie, Pa.

**ERIE** for over thirty years has solved thousands of out-of-the-ordinary bolting problems. As a specialist in bolting, we are especially well equipped to manufacture bolts, studs or nuts in sizes, shapes and tolerances required—threading to any desired fit with heat treatment to specification.

SEND YOUR BOLTING SPECIFICATIONS TO A SPECIALIST

Three types of bolts are shown: a standard bolt, a threaded stud, and a bolt with a flared hex nut.

**Erie Bolt & Nut Co.**  
ERIE, PA.

STUDS • BOLTS • NUTS ~ ~ ALLOYS • STAINLESS • CARBON • BRONZE

**Barium**  
STEEL CORPORATION  
Steelwright to the nation

and when you buy **Reyburn's** you buy the best

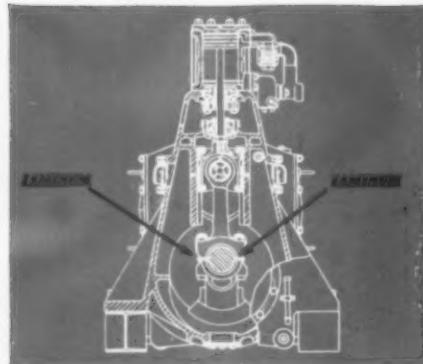
TAGS • LABELS • EMBOSSED SEALS • PIN TICKETS

SEND FOR YOUR FREE COPY OF "REYBURN'S BUSINESS HELPS"

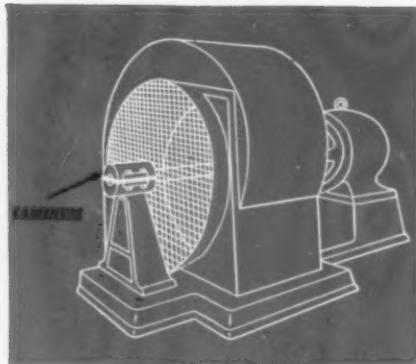
ADDRESS DEPT. B.  
**THE REYBURN MANUFACTURING CO., INC.**  
PHILADELPHIA 32, PA.  
finest quality since 1895

A large central image shows various examples of Reyburn's products, including embossed seals, tags, and labels.

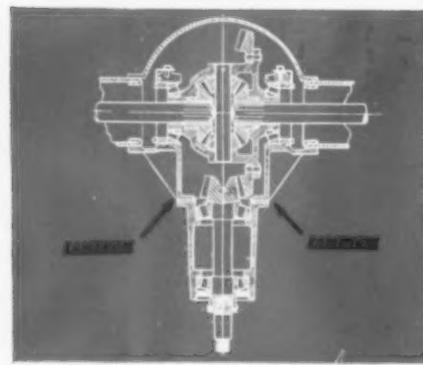
# UP TO 30% SAVING IN ASSEMBLY TIME WITH LAMINUM® SHIMS!



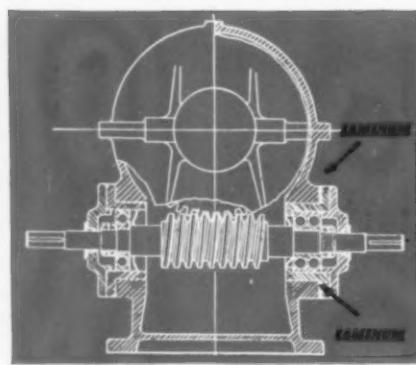
FOR CONNECTING ROD BEARINGS



FOR SPLIT BEARINGS



FOR RING AND PINION MESHING



FOR ANTI-FRICTION BEARINGS

1. No precision machining, grinding, filing, miking.
2. All adjustments made at the job by simply peeling laminations.
3. No fumbling or counting loose paper-thin wafers. Accurate, known gauges.
4. No dirt, oil, grease between shim layers.
5. Harder than stacked or ordinary one-piece shims.
6. Your customer recognizes LAMINUM shims as a plus in maintenance.

**Send today for chart illustrating 46 money-saving, time-saving applications, detailed specifications, sample of LAMINUM.**

## PRECISION STAMPINGS in any quantity

Let us quote on your difficult stamping jobs. Our experience, tools and presses are geared for close tolerance production.

LAMINUM (Reg. U. S. Pat. Off.) shims are solidly bonded laminations of .002 or .003 inch precision gauge brass or steel with a microscopic layer of metallic binder. Cut to your exact specifications.

# LAMINUM

THE SOLID SHIM THAT ADJUSTS

**LAMINATED SHIM COMPANY, Inc.**  
1224 Union Street

Glenbrook, Conn.



SHIMS



SHIM STOCK



STAMPINGS



AN-COR-LOX NUTS

## What Management Expects of Purchasing Department

(Continued from page 293)

ance on the part of the management it works with are equally appropriate. Management must recognize that the purchasing function itself is a part of management, just as all of the many additional top departmental responsibilities are an integral part of the management of any company. To this end, the purchasing function must be given the responsibility, authority, and unqualified support of management at all times, and must also be given the necessary facilities and capital, as well as the support of all other related phases of corporate activity to enable it to do the job of which it is capable.

It goes without saying, of course, that every last measure of purchasing activity must be conducted with scrupulous and uncompromising integrity. The most perfect mechanical system in purchasing is not worth the paper to describe it if there is dishonesty in the ranks. Honesty, then really becomes the No. 1 expectation and requirement of the entire purchasing function. Without honesty there can finally be nothing but suspicion, failure, and collapse of responsibility. With integrity and character dominating all activities, internal and external, and with management maintaining the same standards and dealing accordingly, the function of purchasing has a head start toward success and achievement in fulfilling that natural human desire, whether it be individual or corporate, to get the best buy for one's money.

1 1 1

## What Is the Heat Pump?

(Continued from page 109)

are supplied with low cost electric power, then the combinations of climate and lower expenses makes for an ideal situation with respect to heat pump installations. A very favorable aspect is that, in general, where heat pumps can be economically used for winter heating they are almost a necessity for summer cooling.

There are three avenues of approach to the extension of the use of heat pumps. First, there is a large section of this country where they now can be economically justified. Territory adjacent to these "geographically ideal" locations may use heat pumps on a luxury basis in that such installations may be made

(Please turn to page 296)



**Good Enough for a SUPERSTRONG**

If your product is good enough to hold up its head in competitive marketing, it deserves a modern type of quality shipping container.

You will find your answer in **SUPERSTRONGS** - "Bound with Steel." These better boxes and crates are specially designed to cut costs, give greater protection, and increase packing and warehouse efficiency.

Write us for the full **SUPERSTRONG** story. We can probably help your shipping department, just as we have so many others.



RATHBORNE, HAIR AND RIDGWAY COMPANY  
1440 WEST 21st PLACE • CHICAGO 8, ILLINOIS

# Fort Steuben foremost line of steel unit bins & shelving available now!



Whether you require auto-type parts bins with latest features to meet planograph requirements, or single or multiple commercial shelving units . . . all orders large and small are filled at once.

Fort Steuben units are carefully engineered in prime heavy-gage steel . . . erect as easily as a child's construction set.

Dealers and manufacturers' agents are invited to inquire. Write, wire or use convenient coupon below.



## Fort Steuben Metal Products Co.

Steubenville, Ohio · Phone: Steubenville 26204

Fort Steuben Metal Products Co.  
Steubenville, Ohio

Gentlemen: Please send me your complete catalog P.

Name \_\_\_\_\_ Title \_\_\_\_\_

Company \_\_\_\_\_ Street \_\_\_\_\_

City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

### What Is the Heat Pump?

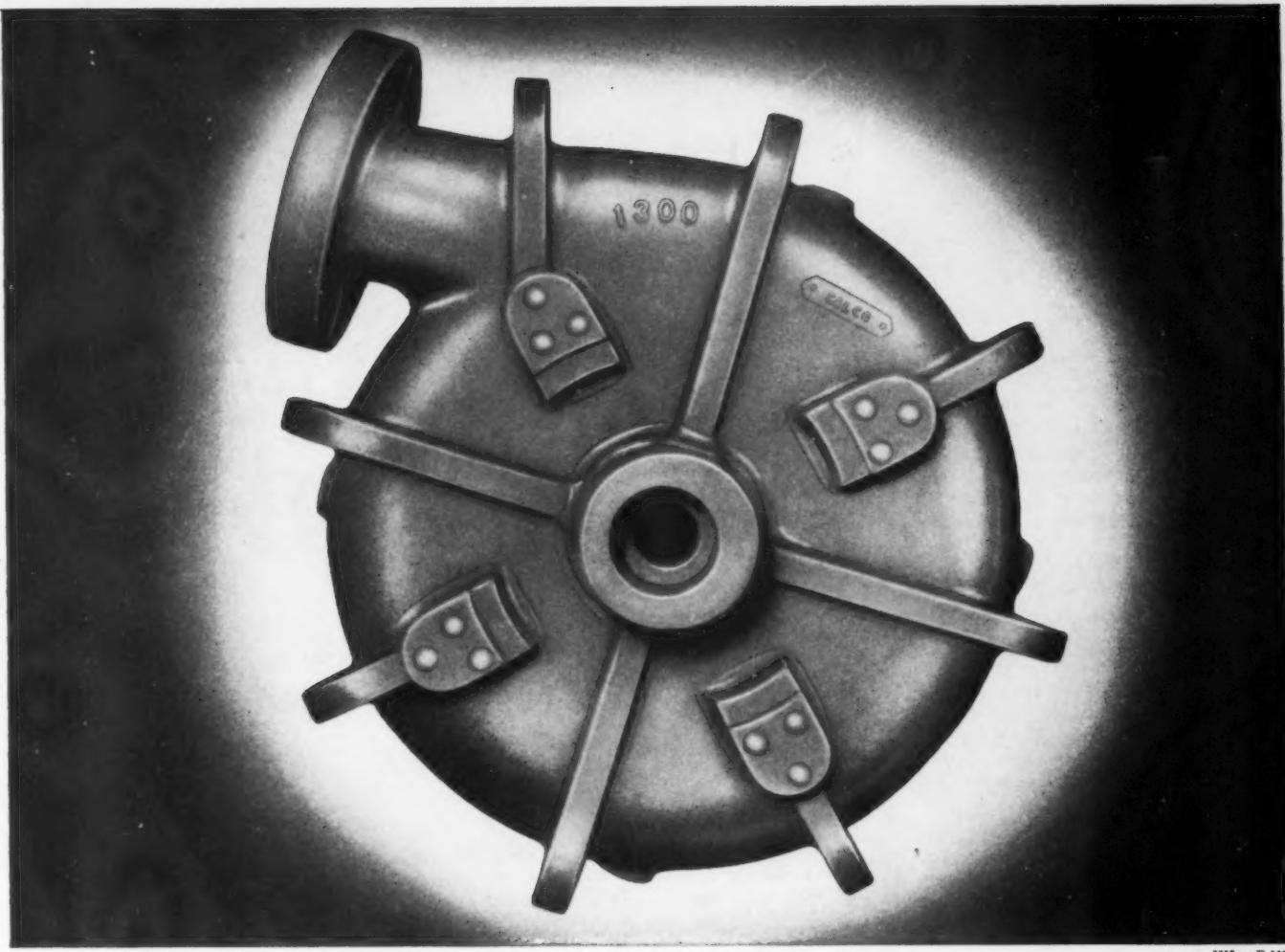
(Continued from page 294)

on a purely comfort basis in higher cost homes or in industrial installations where the power rates are low and the heating season is short. Second, demand for such installations may bring about expansions in the electric utility industry to such an extent that rates may come within ranges where the use of heat pumps will be further extended geographically. This expansion may then make the heat pump systems themselves less expensive because of mass production.

It is noteworthy that both the coal industry and the electric utility industry are giving serious thought to the use of heat pumps, and that manufacturers who would naturally build such equipment are making serious studies of the possibilities of the heat pump.

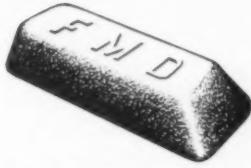
A third consideration for heat pump installations has less to do with electric rates and geography than it has to do with certain types of manufacture. In certain processes large amounts of low pressure steam becomes available for the running of turbines. In such instances it may be desirable to run refrigerant compressors for heat pumps rather than to use the steam for heating. In such instances, as in many others, the added advantage is the summer cooling that may be obtained from steam that might otherwise be wanted. Also in these instances, obviously, the cost of electric power does not become such an important consideration.

There actually is a fourth, long range, thought that must be reckoned. This thought is purely one of the general improvement in living conditions or overall welfare. It is a fact that people will often turn to gas heating, for example, even though the cost may sometimes be double what it would be for coal. Consider also the trend toward better living all around such as mechanical aids to housekeeping; certainly these aids do not lessen the average budget, but they do provide, in each case, a degree of better living. Oversize electric refrigerators, home laundries, television, certainly make homes more expensive to run. On this general trend we may also find a very great extension northwards of the use of heat pump systems based on the elementary fact that they make for better living and that the question of economics is not the criterion.



JMLcor P-110

## Silicon Bronze Proves BETTER and CHEAPER!



Silicon bronze was used in casting this pump casing because of its high strength, its excellent resistance to corrosion, and its price advantage over high tin bronzes.

The casing, weighing over 100 pounds, is cast by Thomas Paulson and Son, Inc., Brooklyn, New York, for the Calco Chemical Division of the American Cyanamid Company.

Practical experience proves it . . . silicon bronze does many casting jobs better and cheaper . . . with a smoother finish. It handles well in the foundry . . . is easily castable with a minimum of smoking.

Famous patented silicon bronzes offered by Federated are: Herculoy, Everdur, Olympic Bronze, and Tombasil . . . plus *all* specification alloys.

Federated's complete line of non-ferrous metals includes copper-base alloys, aluminum and magnesium alloys, bearing metals, solders, die casting alloys and fabricated lead products.

Check with your nearby Federated office for further information. Federated's metallurgical experts will be happy to help on silicon bronze or any foundry problem. Sales offices in 25 cities across the nation.



# Federated METALS

Division of American Smelting and Refining Company, 120 Broadway, New York 5, N. Y.

**Proved and Approved . . .**

## **NEW CESCO Cup-Type Goggles**



### **FEATURING . . .**



**The COMFORT-KING Headband—holds goggles firmly with 30% less tension. Made of round molded rubber—it will not kink, curl or twist. No sharp edges. Instantly adjustable.**

### **Job-Tested and Worker- Endorsed Where Constant Use Is Required**

CESCO's new development in cup-type goggles increases wearer comfort and assures greater worker safety. These goggles have a lightweight feel, yet give sturdy protection. Individually contoured cups fit both left and right eye areas snugly and comfortably, without pressure. COMFORT-KING Headbands provide gentle, firm fit. Use of CESCO goggles will prove their advantages to you.

### **SEVERAL MODELS AVAILABLE**

**CESCO Chippers Goggles—No. 545-C with brown thermoplastic cups shown at top of column. No. 545-T with transparent cups shown below.**



**CESCO Welders Goggles—No. 545-W with 50 mm Cescoweld and cover lenses shown below.**



**Write for CATALOG—New CESCO Catalog tells where to use, how to select protective equipment. Be sure to have this informative book.**

### **CHICAGO EYE SHIELD COMPANY**

2320 Warren Boulevard • Chicago 12, Illinois  
OFFICES IN: Boston, Buffalo, Cincinnati, Cleveland, Columbus, Detroit, East Orange, Houston, Los Angeles, Philadelphia, Pittsburgh, Seattle, St. Louis, St. Paul, Toledo, Tulsa, Montreal



**CESCO  
FOR SAFETY**

### **From One P. A. To Another**

(Continued from page 116)

supply of a product and at the same time tend to price it out of the market, so that a condition of oversupply exists. The market for that product is then disinflated; i.e., the commodity disassociates itself from the general inflationary movement, but without precipitating any severe or general depression. As this process is repeated on other commodity fields, the market level adjusts itself to a new state of balance.

We are still in the inflationary cycle, but we may be near the end of that phase. Armament, relief, and stockpiling purchases tend to sustain demand and prices. What has happened in the stockpiling program illustrates this. Two years of the five-year program have passed; one of the principles observed in this program is that purchases are to be made at or below current markets. In point of time, this program is 40% along, but only 17% of the scheduled purchases have been made. Meanwhile the industrial price level has advanced by 35%.

There is evidence, however, that the process of disinflation has begun. Characteristically, this is taking place first among farm and forest products. If the pattern of past experience follows, and barring another major war, a similar development may be expected in other commodity fields.

The fact that this is a piecemeal or rotational adjustment means that no one policy in respect to purchases and inventories is applicable to all the commodities and products that a purchasing agent is called upon to buy. That would be the easy way, but it is a trap that could catch the purchasing agent and his company in a very uncomfortable position. This is a time for caution and for intelligent appraisal of each commodity market on its own merits, being prepared for any development that may ensue.

### **One Answer to Your Annual Pre-Christmas Prayer**



**H**ERE is a Christmas item that you can offer to your employees with assurance that there will be no gripes later. The Featherline Iron makes an ideal Christmas gift at a price half that of an iron of comparable quality among the heavily advertised lines.

It has an attractive polished aluminum die-cast cover. The regulating dial provides the exact heat needed for any particular fabric. An all-over heating element insures even heat over the entire sole plate. The cord is specially designed to stay off the board while the iron is in use. The rigid ever-tight, grip-shaped folding handle folds flat for convenience when the iron is not used. All Featherline Irons are provided with a suede bag for compact storage of the Iron and its six feet of cord.

**Featherline Irons are guaranteed for quality of material and workmanship for one year.**

Prices 1 to 48—\$4.50 net each, fob Montclair, N. J. Quantity discounts for larger purchases on request. Shipments prepaid if desired, for \$.15 additional. Each iron is packed in an individual carton suitable for mailing. 12 irons are packed to a master carton.

**To insure delivery in time for Christmas, send in orders today.**

**The Oiljak Manufacturing Co.  
MONTCLAIR, N. J.**

(Please turn to page 301)



## "That was when the 'Old Man' rared up....

"What! No tubing?" he shouted. "Did you try Nikoh?"

He needn't have flared up like that—it was embarrassing to be singled out of the whole meeting. *I* didn't know that we could get tubing from Nikoh by sending them our own steel.

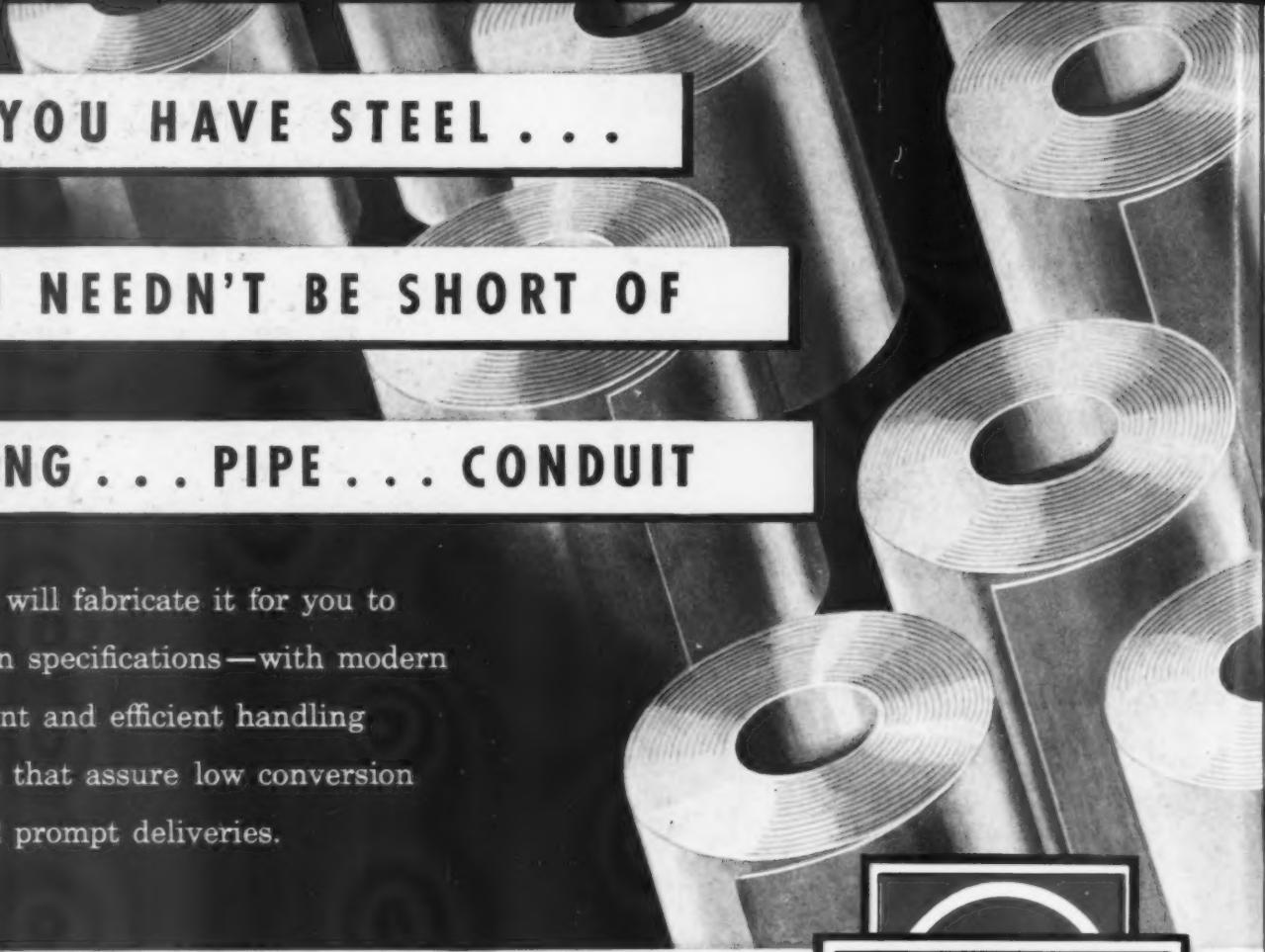
So I'm telling you—don't get yourself on the same spot.

NIKOH makes welded steel tubing up to 4 inches in diameter—pipe up to 6 inches—electric conduit up to 2 inches. NIKOH can fabricate either regular or special shapes



**Need TUBING?... Ask NIKOH**

**NIKOH TUBE COMPANY, 5001 South Kedzie Ave., Chicago 32, Ill.**



**IF YOU HAVE STEEL . . .**

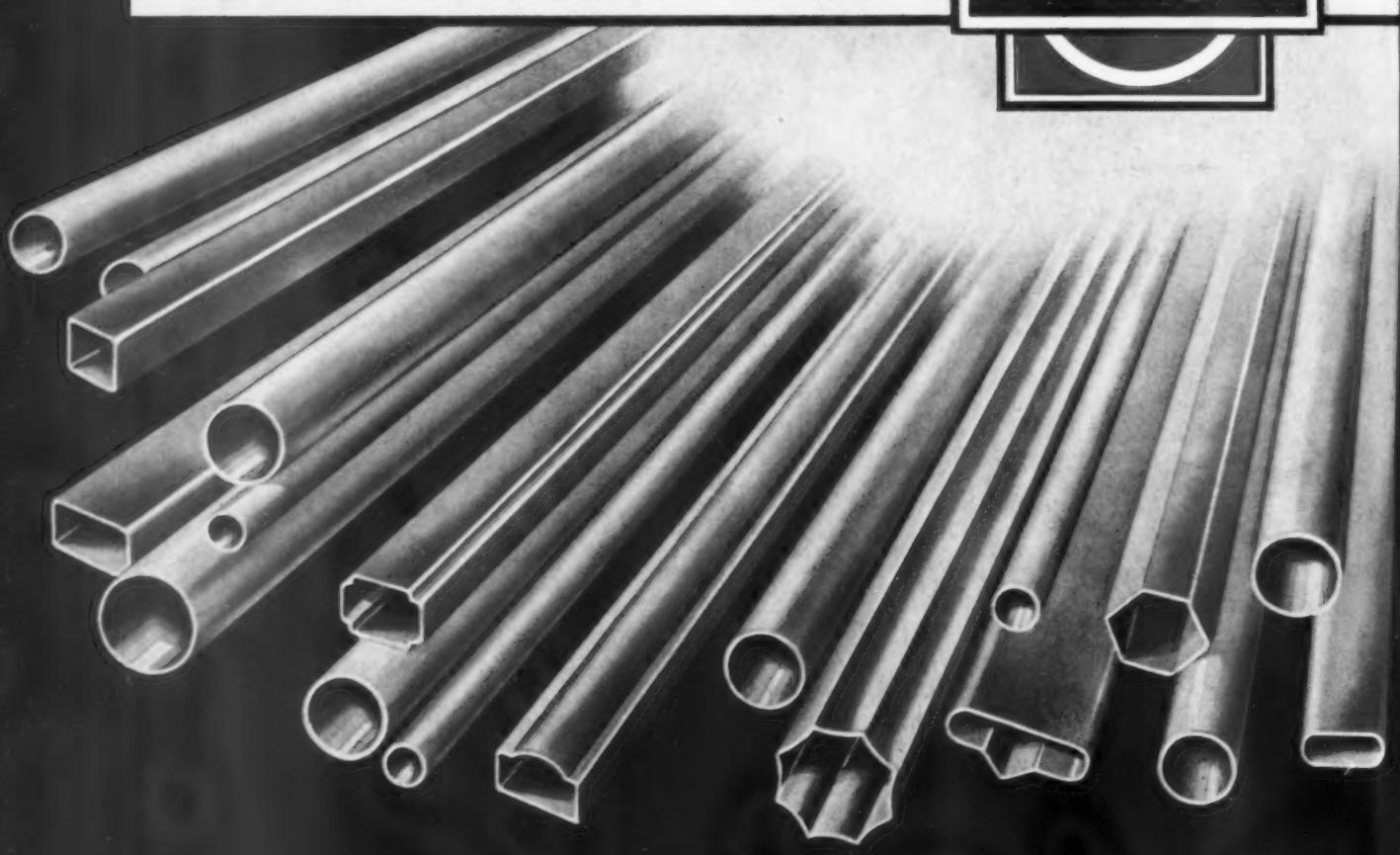
**YOU NEEDN'T BE SHORT OF**

**TUBING . . . PIPE . . . CONDUIT**

NIKOH will fabricate it for you to your own specifications—with modern equipment and efficient handling methods that assure low conversion cost and prompt deliveries.

**NEED TUBING? . . . ASK**

**NIKOH**



**NIKOH TUBE COMPANY, 5001 South Kedzie Ave., Chicago 32, Ill.**

## When Deceit Becomes Fraud

(Continued from page 298)

ter unusual delay in receiving payment for the Cadillac, the manager of the automobile company called the office of the gas company and was informed that Lerch was no longer with the company. Lerch had appropriated the Cadillac and left the employment of the gas company. The automobile company sued the gas company for \$3,500, the purchase price of a Cadillac automobile.

During the trial, the gas company attempted to avoid liability on the grounds that Lerch did not present any writing or order to the automobile company from the gas company authorizing him to buy the automobile, nor did any one connected with the gas company ever inform the manager of the automobile company that Lerch was authorized to buy the Cadillac. However, since the gas company had in the past paid for all motor trucks purchased by Lerch, the highest court held that the gas company had impliedly authorized Lerch to purchase the Cadillac. In holding the gas company liable for payment of \$3,500 to the automobile company, the higher court said:

(Please turn to page 302)

## ARMSTRONG



New  
TOOL HOLDERS  
MAKE MORE PROFIT ON  
EVERY OPERATION

With ARMSTRONG TOOL HOLDERS you can take advantage of the new high speeds and heavier feeds of the newer cutting materials, without revolutionary changes or costly experimentation. They are the most profitable tools obtainable; the lowest in initial cost, the longest in service and most economical in use, for all incorporate the basic Armstrong Principle of small interchangeable cutter-bits in permanent drop forged shanks. They are the most readily obtainable tools too, for they are stocked by all leading distributors.

Write for circulars describing:

- (1) ARMSTRONG Carbide TOOL HOLDERS and ARMIDE (Carbide Tipped) Cutters.
- (2) ARMSTRONG C A TOOL HOLDERS and ARMALOY (Cast Alloy) Cutter-bits.

**ARMSTRONG BROS. TOOL CO.**

"The Tool Holder People"

5203 W. Armstrong Ave., Chicago 30, U.S.A.  
New York San Francisco

# the worst fires start when your plant is unprotected.

### Syracuse, Indiana      Trailer Mfg. 1 dead; \$600,000

Fire, confined to a storeroom when discovered by the watchman, spread to stacks of paint and lumber in a large 1-story factory. A neighbor assisting firemen was trapped within the building.

### Dee, Oregon      Warehouse \$205,000

Flames discovered coming from the roof of a large 1-story wooden warehouse by a watchman at 3:45 A. M. spread to 1,400,000 ft. of lumber stored in the yard of a nearby sawmill.

### Marion, Ohio      Conveyor Mfg. \$350,000

Fire believed caused by a defective water cooler motor spread to painting material stores nearby. At 4:15 A.M., outsiders discovered the flames out of control in the large area 1-story building.

Reports of the National Fire Protection Association, month after month, show that the most costly fires start at night. The basis for this is logical; a small fire starts . . . there is no one there to spot it or to put it out . . . undetected, it grows rapidly . . . then the watchman, or often a passerby, discovers it . . . too late.

The new C-O-TWO Combination Smoke Detecting and Fire Extinguishing System is a 24 hour a day automatic fire watchman. It provides the fastest type of fire protection known. The first whiff of smoke in a protected area sounds an alarm. Then fast, clean, non-damaging carbon dioxide blankets the fire, putting it out in seconds, before it spreads and causes extensive damage. C-O-TWO is safe as well as highly effective on flammable liquid and electrical equipment fires.

Be sure that your flammable liquid hazards, electrical equipment, record and storage vaults . . . all of your fire hazards are completely protected 24 hours a day. Let an expert C-O-TWO Fire Protection Engineer advise you on your fire protection needs now before fire strikes. Write today . . . tomorrow may be too late.



## C-O-TWO FIRE EQUIPMENT COMPANY

NEWARK 1

• NEW JERSEY

Sales and Service in the Principal Cities of United States and Canada

AFFILIATED WITH PYRENE MANUFACTURING COMPANY



**POSTAL RATES GO UP!** for nearly all classes of mail, effective January 1, 1949.

Don't let these new rates catch you with your scales down. Get an accurate new Triner mail or parcel post scale. Its new easy-to-read chart shows the exact postage required—no guessing—no postage waste.

Even a half-dozen 5 or 10¢ stamps wasted daily is nearly \$100 per year. Triner scales prevent such waste. They eliminate uncertainty where parcels are near the line for more postage.

So order promptly. Choose from many styles and capacities.

Triner Scales are designed for the U. S. Postal Dept., where 190,000 are now in use in post offices. Also used by 50,000 business firms.

**TRINER eliminates costly "Zone of uncertainty"**



**Send for details**  
**TRINER SCALES**

You can get full facts at no obligation. Write  
Triner Scale & Mfg. Co., Dept. D-1  
2718 West 21st St., Chicago 8, Ill.

NAME .....

ADDRESS .....

CITY ..... STATE .....

## When Deceit Becomes Fraud

(Continued from page 301)

"The rule governing authority of an agent exists in accordance with the apparent authority which may be created 'by written or spoken words or any other conduct of the principal, which reasonably interpreted causes a third person to believe that the principal consents to have the act done on his behalf by the person purporting to act for him'. . . The gas company knew that Lerch was dealing with the Cooke Automobile Company, and if there was a limited authority, it was incumbent upon gas company to notify Cooke (automobile company) of this limited authority."

1 1 1

## Commodity Standards In the Supply Operation

(Continued from page 142)

seven inter-agency Technical Committees under the auspices of the Federal Specifications Board and are approved by the Director of the Bureau of Federal Supply. The "Index to Federal Specifications" and the individual specifications themselves may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C.

Whether your organization is large or small, you cannot afford to do without the benefits and savings which can be made through the use of effective commodity standards. As the complexity of the supply job has increased, so too has standardization become a highly technical field. Even one good standards man will repay the cost of his salary many times over, through the savings he will make in every phase of the supply operation.

1 1 1

## AIR REDUCTION PRODUCTS NOW IN NEW PACKAGING

The Air Reduction Sales Company, 60 E. 42nd St., New York, N. Y., has announced the adoption of a colorful new set of boxes and cartons for packaging of their welding torches, tips, cutting attachments, regulators and other products.

The purpose of the new orange and black containers is to afford greater production; permit better stock control, quicker inventory taking and easier handling. Each product is packaged in an individual box, clearly marked by product name and stock number. The information appears on one end of the box.

**Good Riddance  
to BAD ODORS!**

**DEODOROMA provides  
lasting protection  
at low cost**

One DEODOROMA refill inside the sturdy chromium Dolge Diffuseur affords effective, pleasant deodorization for an average of 90 days — at a cost of two cents or less per day!

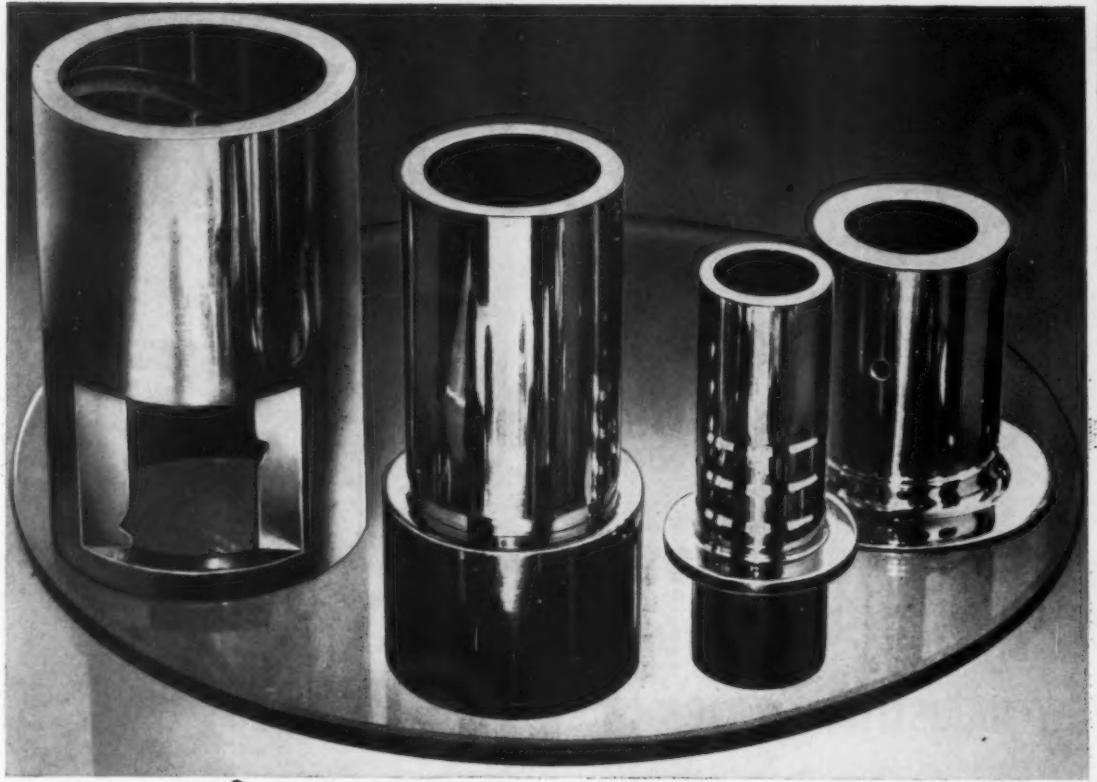
Sweeten foul air in laboratories and other places where offensive odors develop with your choice of three fresh, unobtrusive DEODOROMA fragrances—rose, new-mown hay, ced-o-san.

Make DEODOROMA part of your regular maintenance program.

**Also in crystals and  
urinal blocks**

Complete details from  
your Dolge Service Man, or  
write for folder EDJ-1044.

**DEODOROMA  
THE C. B. DOLGE CO.  
WESTPORT, CONNECTICUT**



If noise is one of your problems, consider the sleeve bearing. The oil film operates silently and insulates against noise transmission. Bunting engineers will gladly discuss specific applications with you. The Bunting Brass & Bronze Company, Toledo 9, Ohio. Branches in principal cities.

# Bunting

BRONZE BEARINGS ☆ BUSHINGS ☆ PRECISION BRONZE BARS

31

*For wiping and polishing*



## Kimwipes® . . . new industrial tissues

At last! A new, efficient cleaning material for a myriad of special wiping uses. Soft, fresh KIMWIPES® industrial wiping tissues. Easy to handle—quickly disposable. KIMWIPES remove the smallest shavings around machined parts without scratching. Recommended for use on all highly finished surfaces. So absorbent, they blot up 16 times their own weight in liquids.

With KIMWIPES, you can use a clean sheet for each operation. They're safer because when you throw away the used tissue, all grit and foreign matter are disposed of. Useful in machine shops, packing rooms—almost any type of business. For full details and the name of the KIMWIPES distributor nearest you, write us on your letterhead. Kimberly-Clark Corporation, Creped Wadding Division, Neenah, Wisconsin, U.S.A.



Automatic  
serve-up  
packages

INDUSTRIAL WIPI NG TISSUES

\*Trademark



## HOLO-KROME Socket Head STRIPPER BOLTS

### ACCURACY assured

Facts—(1) made from special analysis alloy steel (2) scientifically heat treated to develop the utmost in the necessary physical properties (3) heads, bodies and threaded portion perfectly concentric (4) bodies are ground (5) threads are perfect in lead and held to Class 3 Thread fit (6) checked and gauged to the Holo-Krome rigid standards of accuracy during each step in production (7) and finally, every single bolt individually hand inspected before packaging . . . Accuracy is assured in H-K Stripper Bolts and in all Holo-Krome quality Socket Screw Products. For guaranteed unfailing performance specify Holo-Krome.

H-K Distributors  
give prompt ser-  
vice from their  
warehouse stock.  
Try 'em!



**Mack**  
LET **MACK**  
FIGURE IT IN PLASTICS—

PART MOLDED BY MACK FOR  
A SIMMONS BED, PRODUCT  
OF THE SIMMONS COM-  
PANY, PROMINENT  
PRODUCER OF MAT-  
TRESSES AND  
BEDSTEADS



Write for 12 page  
Booklet C describing  
the complete MACK  
facilities—no obliga-  
tion.

## 3 plants completely equipped to serve you!



DESIGN



MOLD MAKING



MOLDING

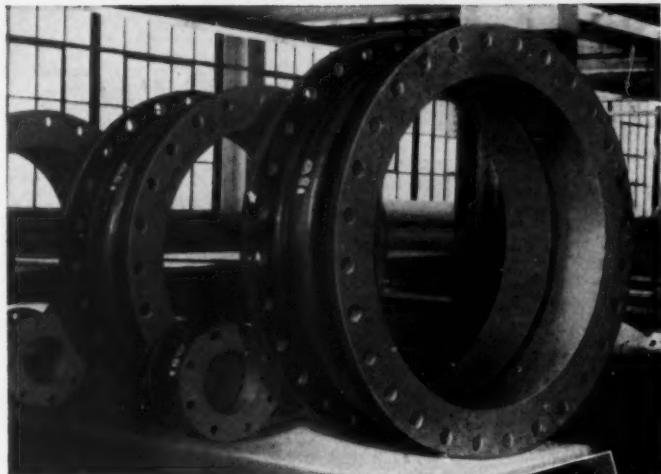
- WAYNE, NEW JERSEY
- ARLINGTON, VERMONT
- WATERLOO, P.Q., CANADA

Figured any way you look at it, letting MACK figure on your plastic molding jobs makes good sense. In the business since the early days of the industry, MACK has the experience and the facilities to do the job right. Choice of materials, design and mold making, finishing and delivery are all carefully followed through to insure the best results for you. That's why many MACK customers have been with us for a quarter of a century.

THIRTY  
YEARS

MACK MOLDING  
IS ONE OF THE  
**ORIGINAL**  
PLASTIC MOLDING  
SPECIALISTS

**Mack**  
**MOLDED**  
**EXCELLENCE**



*Garlock*

## RUBBER EXPANSION JOINTS

for Pressure, Vacuum or Pressure and Vacuum

Garlock Rubber Expansion Joints are flexible, rubber spool-type joints for installation in pipe lines to relieve stresses and strains in the piping and equipment. They function in four ways: (1) compensate for linear expansion and contraction due to temperature changes; (2) absorb vibration; (3) eliminate or reduce noise; (4) compensate for minor misalignment in the piping.

Made of an exclusive high-grade rubber compound developed in our research laboratories, Garlock Rubber Expansion Joints are strong, efficient and long-lasting. They are easy to install. Furnished in all pipe sizes from 2" to 72"—and in three styles: No. 204 for Pressure; No. 205 for Vacuum; No. 206 for Pressure and Vacuum.

Garlock Rubber Expansion Joints of standard construction are suitable for handling hot or cold water, brine or exhaust steam at temperatures up to 180°F. Joints with synthetic rubber lining are recommended for service involving oils, acids or mild caustic solutions. Write for new descriptive folder.



THE GARLOCK PACKING COMPANY  
PALMYRA, N.Y.

In Canada: The Garlock Packing Company  
of Canada Ltd., Montreal, Que.

**GARLOCK**

# TRIMO-ALLOY

INDUSTRY'S BIG, TOUGH,  
ALL-ALLOY STEEL

## PIPE WRENCH

DROP FORGED

Whatever size Trimo-Alloy Pipe Wrench you need, buy and use, you get "oversize" power and durability—because it's the only wrench on the market that is entirely made of drop forged alloy steel. The teeth are hardened by modern induction heat-treatment—and the whole wrench is tough in the right places to stand tremendous stress. Trimos are the most powerful wrenches ever built for industry. Put them to work wherever other wrenches are found wanting.

**TRIMONT MANUFACTURING CO.**

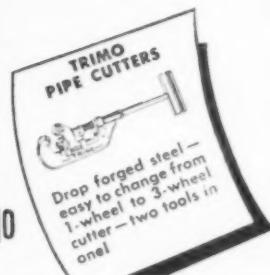
DIVISION OF AETNA INDUSTRIAL CORP.

55½ AMORY STREET, ROXBURY, BOSTON 10, MASS.



### EVERY PART IS GUARANTEED

- Trimo Alloy Pipe Wrenches are made to exceed Government Specifications ... Type II Heavy Duty GGG-W-651a.
- Only Trimo Pipe Wrenches are manufactured throughout from alloy steels.
- Only Trimo Wrenches have teeth hardened by modern induction localized heat-treating process to close Rockwell specifications.
- Tests prove Trimo drop-forged steel handle capable of bearing strains up to 40,000 inch-pounds — more than double that of cast malleable handles in same size wrench.
- Trimo's frame design is on the efficient "knee-action" principle — making possible one-hand use on otherwise two-hand jobs.
- Replaceable lower jaw saves buying complete new handle after the wear of extended use.



Slip Wrenches • Chain Wrenches • Monkey Wrenches • Stillson Type Wrenches • Spud General Utility Wrenches • Saunders, Barnes and Other Type Pipe Cutters • Pipe Vises, Chain Vises • Saw Vises • Kit and Portable Vises

## QUALITY CONTROLLED

FROM TREE  
TO YOU



### ORANGE CORE GUMMED SEALING TAPE

... is so uniformly good . . . so utterly dependable. From raw pulp to the finished roll, every step in the manufacture of Orange Core is controlled by experts—all in one plant. That's your guarantee of the consistent high quality that's made this tape "America's Most Popular Brand." Ask your supplier for Orange Core today.



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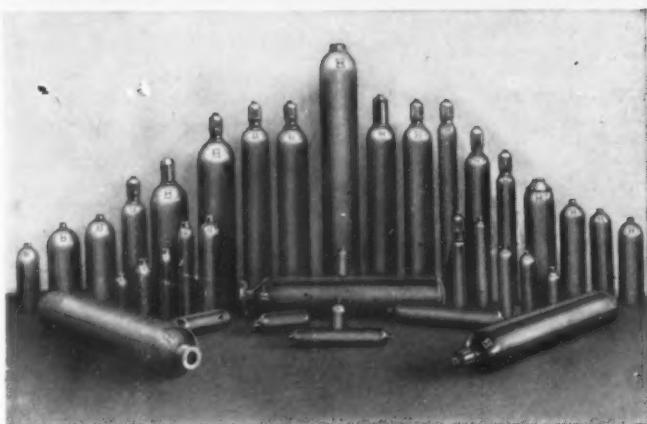
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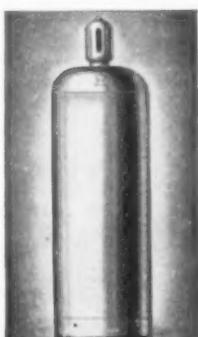
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**Standard or lightweight type.** Plate-Made for maximum uniformity of side-walls and bottoms. Designed for capacities and pressures to meet specifications and requirements of all countries.



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J. C. C. 4B240

**Uniformly durable . . . brazed edges of rolled steel cylinder sheets produce a union twice the strength of the original metal. Heads of uniform thickness are inserted and fused to cylinder by fillet weld thus assuring extra margin of strength and longer life.**

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Made in any design specified, in any quantity from our own custom made carbon or alloy steels. Harrisburg's battery of hammers includes capacities from 1000 lbs. to 8000 lbs.



HARRISBURG ALSO MANUFACTURES:  
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**Aleoa Fasteners** for aluminum assemblies prevent that sore thumb look that results when galvanic action attacks dissimilar metals and causes corrosion, or when red rust attacks. Aleoa Aluminum Fasteners come bright and stay bright—dress up your aluminum assemblies.

Complete selection—wood, sheet metal and machine screws in a range of types and sizes; washers; hex head bolts; hex, cap, wing and castle nuts, all in standard sizes and threads. **ALUMINUM COMPANY OF AMERICA**, 619 Gulf Building, Pittsburgh 19, Pennsylvania.



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# ALCOA *Aluminum* FASTENERS

# LETTERS . . .

## "PIC" ANALYZES PURCHASING

My position as Chief Purchasing Clerk in this office has inspired me to the extent of making this ever-changing and rapidly advancing profession my life-time career.

In the November issue of "PIC" magazine, I noted that your firm publishes a monthly magazine entitled PURCHASING and I would like to subscribe in order to stay abreast of the conditions in this field.

Presley C. Mayo, Jr.  
Sergeant, USAF  
Columbus, 17, Ohio.

In an excellent analysis of purchasing as a profession, "PIC" says in part:

"Outlook good; wartime spotlighting of role of purchasing agent in meeting production schedules, management's realization that up to 60% of manufacturing cost is in purchase of raw and semi-finished materials, constant widening of base, point to continued favorable prospects as to both employment and status of purchasing agents. Estimated 6,000 students taking courses in purchasing in 127 colleges.

"College education highly desirable, preferably with degree in engineering or business administration. Courses should include purchasing, accounting, business economics, commercial law, finance, marketing and research. Post-graduate work in purchasing, related subjects advantageous. Personally, you need alert, inquisitive mind; initiative and good business judgment; personality, tact and firmness in representing your company; willingness to assume responsibility.

"Purchasing agent earns \$4,500-25,000, average is \$8,000. Wide pay ranges due to differences in size, type of companies, annual purchase volume, importance of materials purchased, responsibilities of purchasing officer. Advantages: broad knowledge gained opens way to highest executive jobs. Disadvantages: some companies still consider purchasing subordinate function, pay accordingly . . ."

## ROUTING FORMS FREE

Thanks kindly for the routing slips which would cover items of interest in the PURCHASING Magazine for other individuals in our office.

R. W. Kuchma, Purchasing Agent,  
Meili-Blumberg Corporation,  
New Holstein, Wisconsin

Routing forms are supplied free of charge to PURCHASING subscribers. Send in your list of PURCHASING readers and a year's supply of the convenient pass-on slips will be processed for you.—Ed.

## THEY READ THE ADVERTISING

Many times salesmen calling on our buyers request a trial on some product which they consider equal or better for a particular purpose than a product we are using regularly and when samples are received the test report is used in submitting the samples to our Operating Department for comparative tests.

Also a portion of our time is devoted to reading advertising in several publications in-

cluding PURCHASING and when we find products advertised that we feel might prove advantageous, we write for samples and these samples in the same manner are tested using the test report.

Our Operating Department is most cooperative and through this procedure many substitute materials have been discovered that have proved more economical or better for a particular purpose than materials we previously considered standard.

Henry L. Ruf, General Purchasing Agent,  
Parkersburg Rig & Reel Co.,  
Parkersburg, West Virginia.

## BLOCKED STORM CELLAR

On page 135 of your October issue is a picture which has me wondering. It depicts people running to a shelter which presumably is held in an open position by two props. However, one prop seems to be directly in the path of the stairs leading into the below-ground shelter. What is bothering me is how the people are going to get down the stairs with the prop in the way.

George A. Blum  
Whitestone, L. I., New York



Our artist, who is from Staten Island, which is not the cyclone area, claims that the supports swing out of the way while the shelter is being entered. This requires two fearless souls, unafraid of twisters, to hold the cover upright until everyone, except the two fearless souls, are below ground. We are not convinced, and we agree with Mr. Blum.—Ed.

## ENCYCLOPEDIA

Your July Ford PURCHASING Issue, without question, should be classified as a "Purchasing Encyclopedia." We are most highly pleased.

Frank P. Butler, Director of Purchases,  
Collins & Aikman Corporation,  
New York 16, N. Y.

## BOUQUETS

PURCHASING Magazine is certainly enjoyed and appreciated by all reading it. It is a magazine of the highest caliber.

F. E. Breuleux, Purchasing Agent,  
Le Tourneau Company of Georgia,  
Vicksburg, Mississippi

PURCHASING is one of the outstanding magazines in the industrial field.

Wayne Hamlett, Purchasing Agent,  
Continental Machines, Inc.,  
Savage, Minnesota.

I thoroughly enjoy PURCHASING. I look forward to its arrival each month. Of all the

periodicals arriving at our office, PURCHASING issues are always kept for ready reference. I do enjoy your good work, especially your recent Ford Issue.

Henry D. Hull, Purchasing Agent,  
Badger Machine Company,  
Winona, Minnesota.

## MAIL COURSE IN PURCHASING

Could you send us information regarding a college or university that offers a course in purchasing through the Extension Division of correspondence studies?

D. M. Kruchko, Assistant Purchasing Agent  
The State University of Iowa,  
Iowa City, Iowa.

We know of no correspondence course in PURCHASING.—Ed.

## MEDIUM FOR DISCUSSION

I want to use the Ford Issue as a medium for discussion in the meetings of the Racine County Purchasing Agents Association of which I am President.

K. P. Hermes, Purchasing Agent  
Andis Clipper Company  
Racine, Wisconsin

## FRIEND

Over a period of time, I have received questionnaires with respect to value of various magazines. You may rest assured that I always give PURCHASING a magnificent "plug" whenever the opportunity is present.

L. C. McIver,  
Purchasing Agents' Association of  
Washington, Inc.  
Seattle, Wash.

Thank you.—Ed.

## BOUQUET FOR WRONG AUTHOR

I just had the pleasure of reading in the January issue of the *Advertiser's Digest* a condensed article by Stuart F. Heinritz, editor of PURCHASING on "The Purchasing Function in Advertising."

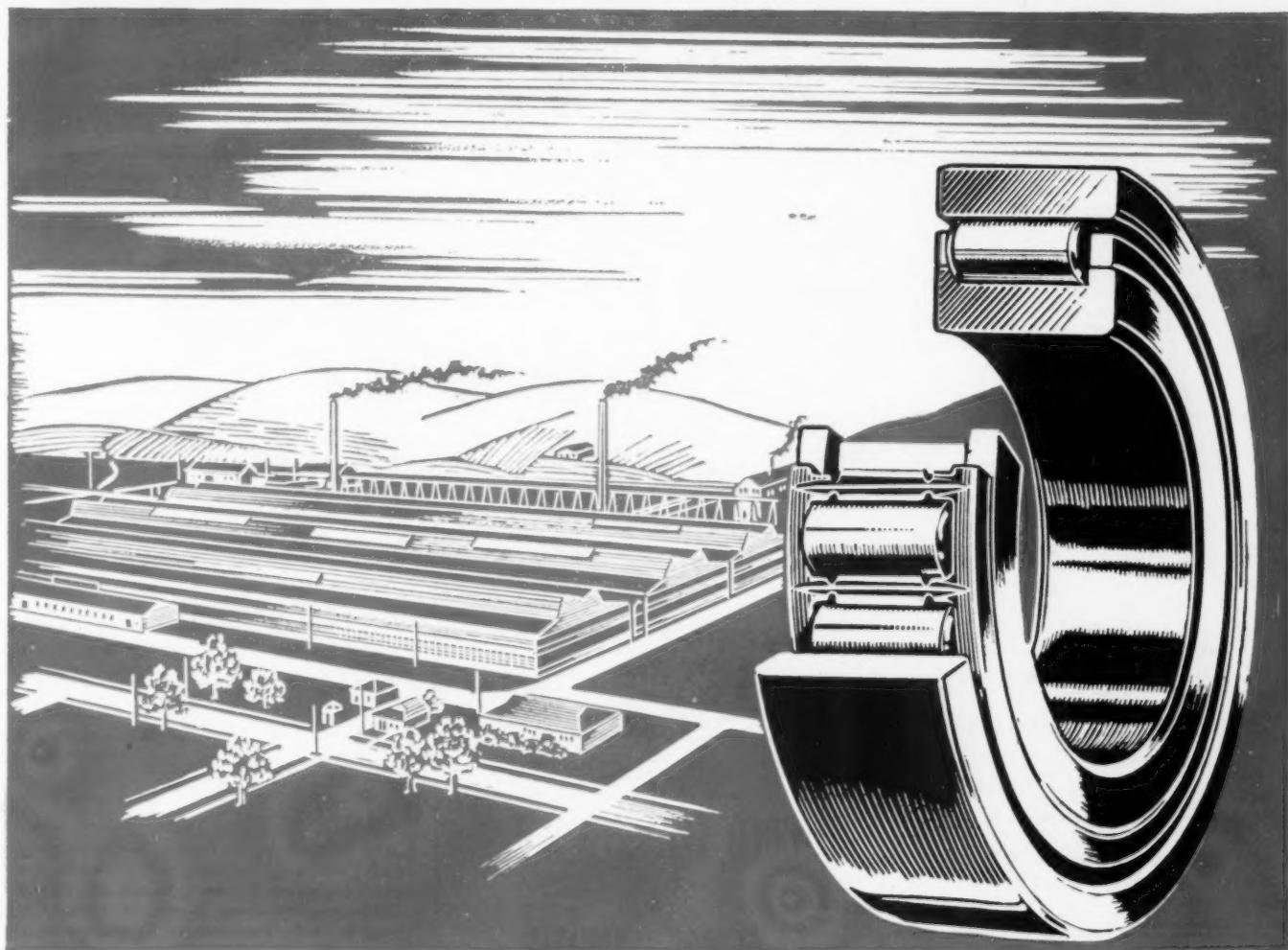
I certainly want to congratulate you on your very constructive approach and you will be interested to know that I have passed this article to our entire Advertising Department to read. You will also be interested to know that we have been functioning for many years along the exact lines which you have outlined in your article and we have one of the finest setups as far as the purchasing of advertising is concerned, I think, of any company in the United States.

L. W. Ledbetter, Gen. P. A.  
Ralston Purina Company  
St. Louis 2, Missouri

PURCHASING's editor would be acting under false pretenses if he were to take a personal bow for the authorship of this story, despite the fact that *Advertiser's Digest* credited him with authorship. It was written by J. B. Lalley, a New York advertising agency man, and was originally published in the October 1947 issue of PURCHASING with the proper by-line. When *Advertiser's Digest* wrote for permission to reprint, it apparently became confused between the signature on the correspondence and the signature on the article.—Ed.

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. . . *Tycol Acylkup Greases* are water-repellent and blended with the finest calcium soap, enough to make every application "stay put" at all times.

. . . *Tycol Acylkup Greases* have a smooth, non-fibrous structure that permits easier application in grease guns and central lubricating systems.

. . . *Tycol Acylkup Greases* safeguard precision anti-friction bearings and heavily loaded gears alike . . . save by standardizing on Tycol!

Complete information on *Tycol Acylkup Greases* is available from your nearest Tide Water Associated Office. Call or write in today.

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309

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PURCHASING AGENT—early thirties with 15 years experience in rubber & metals fabricating industries, including recent South American assignment. Extensive experience managing Purchasing, Receiving, Stores, By-Products, Shipping & Traffic Departments. Experience includes foreign shipping, customs & exchange control regulations. Presently employed. Married. Good knowledge Spanish. Will relocate. Former member N.A.P.A. Box 1203, PURCHASING, 205 E. 42 St., N. Y. 17.

PURCHASING AGENT or ASST.—Currently Supervising West Coast Activities for National Food and Baking Products Company in Capacity of Purchasing Agent. Activities Include Restaurants, Packaging, Food Ingredients, General Factory and Maintenance Requirements. Member N.A.P.A. Young, Married. Former New Yorker, Would Prefer N.Y. Metropolitan Area. Box 1204, PURCHASING, 205 E. 42 St., N.Y. 17.

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#### NEW ENGLAND

#### PRESSED STEEL COMPANY

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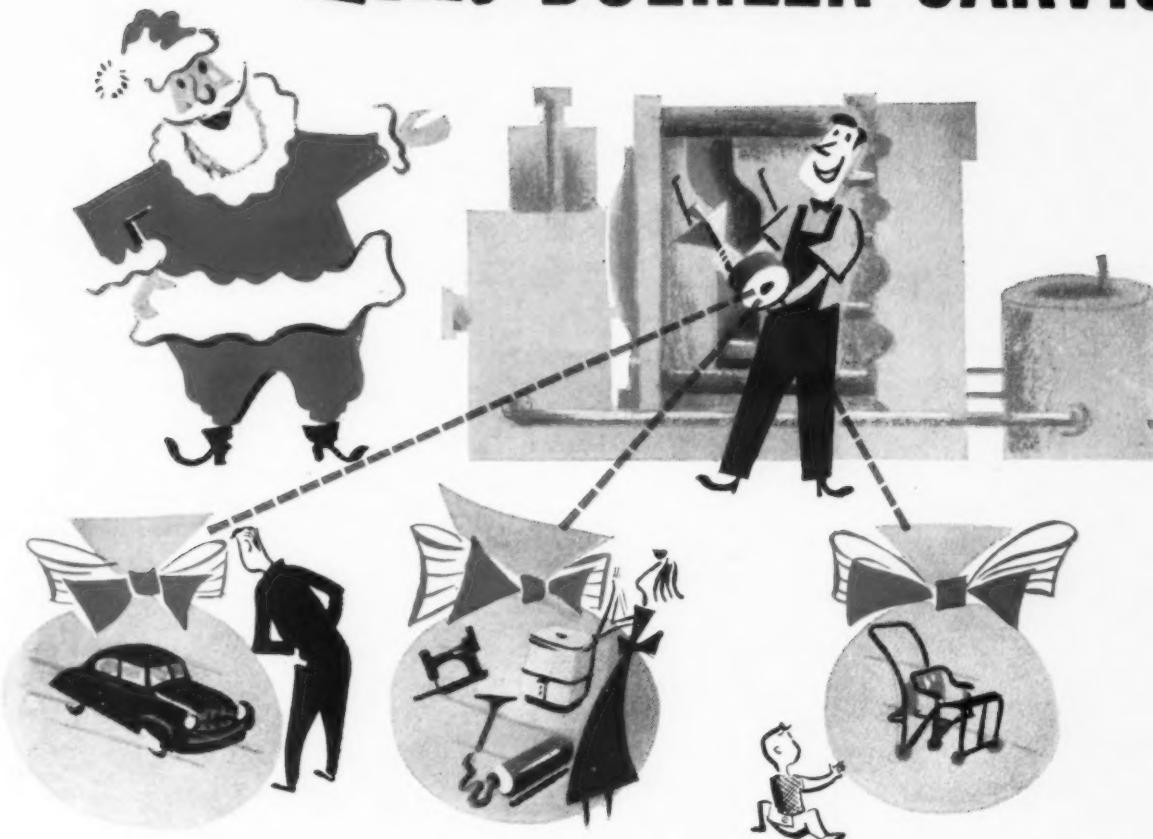
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# Santa Claus Appreciates Helpers Like DOEHLER-JARVIS



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**FOR MOTHER**—Doehler-Jarvis makes another 1,500 different die-cast parts for Milady's vacuum cleaner, sewing machine, kitchen mixer and other appliances.

**FOR THE KIDS**—Versatile Doehler-Jarvis die-casting machines also turn out complete cast metal toys as well as gadgets from pencil sharpeners to candlesticks.

In our modern world of mass-production, die-casting is probably the most efficient and fastest of the whole list of production techniques.

There are thousands of products on the market today whose cost could be lowered, whose usefulness could be improved and whose sales would be increased by the application of Doehler-Jarvis die-casting methods.

Why not let us apply our fifty years of accumulated know-how and the facilities of our seven strategically-located plants to helping solve some of your design and production problems.

It could be a Christmas present that will cheer your production and sales departments this year and for many years to come.

## DOEHLER-JARVIS CORPORATION

*The World's Largest Producer and Finisher of Die Castings*

PLANTS IN: CHICAGO, ILL. • GRAND RAPIDS, MICH. • TOLEDO, O. • POTTSTOWN, PA. • BATAVIA, N. Y.



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# Advertisers IN THIS ISSUE

## A

Abrasive Products, Inc.	12
Acme Steel Co.	69
Aerol Co.	272
Air Express Div., Railway Express Agency, Inc.	172
Air Reduction Sales Co. & Subsidiaries	8
Aircraft-Marine Products, Inc.	270
Allegheny Ludlum Steel Corp.	285
Allison Co.	276
Aluminum Co. of America	275, 307
American Chain Div.	164
American Chain & Cable Co., Inc.	182
American Manganese Steel Corp., Div. Amer. Brake Shoe Co.	24
American Optical Co.	60
American Screw Co.	59, 160
American Steel & Wire Co.	209
Ames Molded Plastics	329
Ampex Mfg. Co.—Chrysler Corp.	163
Anaconda Copper Mining Co. & Subsidiary Cos.	79, 80
Armour Sandpaper Works	72
Armstrong-Bray & Co.	286
Armstrong Bros. Tool Co.	301
Associated Spring Corp.	34
Atlantic Screw Co.	59
Atlas Bolt & Screw Co.	59

## B

Babcock & Wilcox Tube Co.	255
Barnes Co., Wallace	34
Barnes Co., Ltd., Wallace, The	34
Barnes-Gibson-Raymond	34
Bassick Co., The	316
Bath Co., Inc., John	26
Bauer & Black	288
Bay State Abrasive Products Co.	31
Bay State Tap & Die Co.	196
Behr-Manning Corp.	218
Bemis Bro. Bag Co.	52
Bendix Aviation Corp., Scintilla Magneto Div.	155
Bethlehem Steel Co.	217
Billings & Spencer	278
Black & Decker Mfg. Co.	175
Blaw Knox Co.	206
Bond Foundry & Machine Co.	242
Bridgeport Brass Co.	267
Bristol Co.	81
Brown & Sharpe Mfg. Co.	161
Buffalo Bolt Co.	33
BullDog Electric Products Co.	18
Bundy Tubing Co.	199
Bunting Brass & Bronze Co.	303

## C

Carborundum Co., The	173
Carnegie-Illinois Steel Corp.	43
Celanese Chemical Div.	147
Celanese Corp. of Amer. & Subsidiary Cos.	147
Central Paper Co.	258
Central Paper Co., Inc.	286
Central Screw Co.	59
Century Electric Co.	3
Champion Lamp Works	184
Chandler Products Corp.	59
Chase Brass & Copper Co., Inc.	195
Chicago Eye Shield Co.	298
Chicago Rawhide Mfg. Co.	4
Chicago Wheel & Mfg. Co.	284
Cities Service Cos.	213
Clark Industrial Truck Div., Clark Equipment Co.	192
Classified Advertising Section	310
Clemson Bros., Inc.	64
Cleveland Cap Screw Co.	287
Cleveland Container Co., The	162
Cleveland Twist Drill Co.	243
CONOVER-MAST PURCHASING DIRECTORY	236
Consolidated Electric Lamp Co., Champion Lamp Works	184
Container Corp. of America	219
Continental Diamond Fibre Co.	179
Continental Rubber Works	252
Continental Screw Co.	59
Corbin Screw Corp.	59, 189
C-O-Two Fire Equipment Co.	301
Crane Co.	277
Cullinan Wheel Co.	250

## D

Darnell Corp., Ltd.	268
Dayton Rubber Mfg. Co.	279
Dick Co., A. B.	226
Disston & Sons, Inc., Henry	251
Diversey Corp., The, Indus. Maint. Dept.	212
Doehler-Jarvis Corp.	311
Dolge Co., C. B.	302
Domore Chair Co., Inc.	230
Dravo Corp.	170
Dunbar Bros. Co. Div.	34

## E

Eaton Mfg. Co., Foundry Div.	73
Elastic Stop Nut Corp. of America	283
Electric Storage Battery Co.	167
Elwell-Parker Electric Co.	50
Emerson Electric Mfg. Co.	274
Erie Bolt & Nut Co.	293
Esleeck Mfg. Co.	228
Essex Wire Corp.	62
Etching Co. of America	190
Eureka Specialty Printing Co.	230

## F

Fastener Corporation	256
Federal Telephone & Radio Corp.	197
Federated Metals Div., Amer. Smelting & Refining Co.	297
Ferry Cap & Set Screw Co.	46
Fiske Bros. Refining Co., Lubriplate Div.	210
Flexible Steel Lacing Co.	152
Forest City Foundries Co.	212
For Steuben Metal Products Co.	296
Foster Co., L. B.	154
Foxboro Co., The	253, 254
Fuller Brush Co.	210

## G

Garlock Packing Co.	305
Gates Rubber Co.	48
General Box Co.	10
General Chemical Div., Allied Chemical & Die Corp.	203
General Electric Co.	204
Air Conditioning Dept.	204
Apparatus Div.	29, 170, 193, 194, 280, 281
Permanent Magnets	41
General Electric Co., Lamp Div.	149
General Tire & Rubber Co.	166
Gibson Co., William D., The	34
Gits Bros. Mfg. Co.	183
Goodyear Tire & Rubber Co., Inc.	13
Gould Storage Battery Corp.	239
Graham & Co., Inc., John H.	272
Graybar Electric Co., Inc.	82
Great Lakes Steel Corp.	145
Greenfield Tap & Die Corp.	53
Griffin Co., G. W.	272
Grinnell Co., Inc.	32

## H

Harper Co., H. M.	59, 205
Harrisburg Steel Corp.	307
Herbrand Div., Bingham-Herbrand Corp.	38
Hinde & Dauch Paper Co.	185
Hobbs Mfg. Co.	278
Holo-Krome Screw Corp.	304
Hood Rubber Co.	286
Hotel Hollenden	236
Hudson Pulp & Paper Corp., Moore & Thompson Div.	306

## I

Illinois Coil Spring Co.	202
Ingersoll Steel Div., Borg-Warner Corp.	178
Inland Steel Co.	5
International Business Machines Corp.	227
International Nickel Co.	27
International Paper Co.	235
International Screw Co.	59

## J

Jenkins Bros.	4th Cover
Johnson Steel & Wire Co., Inc.	258

## K

Keasbey & Mattison Co.	211
Keweenaw Mfg. Co.	232
Kex National Service	158
Keystone Steel & Wire Co.	188
Kimberly-Clark Corp.	304

## L

Lacquer & Chemical Corp.	170
Laminated Shim Co., Inc.	294
Lamson & Sessions Co.	59
Laytham & Sons Co., Inc., William P.	186, 187
Lea Mfg. Co.	216
Levinson Steel Co.	214, 215
Levinson Steel Sales Co.	214, 215
Link-Belt Co.	11
Lubriplate Div., Fiske Bros. Refining Co.	210
Lunkenheimer Co.	248
Lyon Metal Products, Inc.	55

## M

MacRae's Blue Book	232
MacWhaye Co.	17
Mack Molding Co.	305
Magnus Chemical Co.	250
Marsh Corp., Jas. P.	74
Master Electric Co.	75
Mayers Co., L. & C.	234
Mercury Printing Company	223
Meyercord Co.	259
Midwest Piping & Supply Co.	261
Milford Rivet & Machine Co.	39, 152
Millers Falls Co.	262
Mills Corporation, Elmer E.	263
Minnesota Mining & Mfg. Co.	153
Missouri-Kansas-Texas Lines	291
Mobilift Corp.	66
Moore Business Forms, Inc.	220
Moore & Thompson Div., Hudson Pulp & Paper Corp.	306
Murray Co., A. B.	180

## N

Nashua Package Sealing Co.	45
National Bearing Div., American Brake Shoe Co.	77
National Electric Products Corp.	49
National Forge & Ordnance Co.	47
National Lock Co.	59
National Paper Box Manufacturers Assoc.	315
National Screw & Mfg. Co.	59, 249
National Supply Co., Spang-Chalfant Div.	57
New Britain Machine Co.	61
New England Screw Co.	59
Nicholson File Co.	15
Nikoh Tube Co.	293, 300
Norma-Hoffman Bearings Corp.	289
Norton Co.	191, 218

## O

Oakite Products, Inc.	270
Ohio Div., Association Spring Corp.	34
Oiljak Mfg. Co., The	298
Ohio Rubber Co.	71
Okonite Co.	247
Old Town Ribbon & Carbon	234
Osborn Mfg. Co.	7

## P

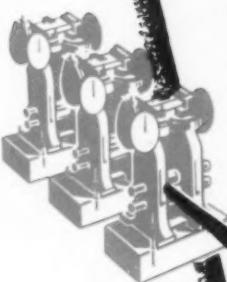
Page Steel & Wire Div.	290
Parker-Kalon Corp.	59, 70
Pawtucket Mfg. Co.	276
Pawtucket Screw Co.	59
Peninsular Grinding Wheel Co.	201
Pheoll Mfg. Co.	59
Phillips Screw Manufacturers	59
Pittsburgh Plate Glass Co., Brush Div.	40
Plumb, Inc., Fayette R.	157
Powell Co., William	78
Premier Metal Etching Co.	244
Purdy & Co., Inc., A. R.	165
Pyott Foundry & Machine Co.	282

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55-35

R	
Railway Express Agency, Inc., Air Express Div.	172
Rathborne, Hair & Ridgway Co.	295
Raybestos-Manhattan, Inc., Packing Div.	54
Raymond Mfg. Co.	34
Reading Screw Co.	59
Reliance Electric & Engineering Co.	169
Remington Rand, Inc.	231
Republic Steel Corp.	241
Revere Copper & Brass Inc.	174
Reyburn Mfg. Co., Inc.	293
Rhode Island Tool Co.	178
Ridge Tool Co.	269
Rising Paper Co.	230
Roebling's Sons Co., John A.	9
Rollway Bearing Co.	42
Russell, Burdsall & Ward Bolt & Nut Co.	59
Ryerson & Son, Inc., Joseph T.	88
S	
Safety & Maintenance Co., Inc.	260
Safety Socket Screw Co.	168
Sandvik Steel, Inc.	313
Sawyer & Son Co., The H. M.	290
Scovill Mfg. Co.	59
Security Steel Equipment Corp.	229
Shakeproof, Inc.	59
Simonds Gear & Mfg. Co.	154
Skillsaw, Inc.	51
Solvay Sales Div., Allied Chemical & Dye Corp.	37
Southington Hardware Mfg. Co.	59
T	
Taylor Co., Halsey W.	278
Taylor Fibre Co.	156
Templeton, Kenly & Co.	202
Texas Co.	2nd Cover
Thermoid Co.	76
Tide Water Associated Oil Co.	309
Titeflex, Inc.	202
Towmotor Corp.	180
Trimont Mfg. Co.	306
Triner Scale & Mfg. Co.	302
Triplex Screw Co.	65
Tube-Turns, Inc.	171
U	
Uareo, Inc.	225
Udylite Corp.	207
Underwood Corp.	233
V	
Valley Electric Corp.	314
Veeder-Root, Inc.	58
W	
Wagner Electric Corp.	56
Walworth Co.	63
Weirton Steel Co.	273
Westfield Metal Products Co., Inc.	314
Westinghouse Electric Corp.	176, 177, 245, 3rd Cover
Wheatland Steel Products Co.	292
Wheeler Reflector Co.	257
Whitney Chain & Mfg. Co.	44
Wirebound Box Manufacturers Assoc.	22
Wisconsin Motor Corp.	282
Wolverine Bolt Co.	59
Worcester Pressed Steel Co.	36
Worthington Pump & Machinery Corp.	35
Wright Hoist Div.	84
Y	
Yale & Towne Mfg. Co.	271
Youngstown Sheet & Tube Co.	151

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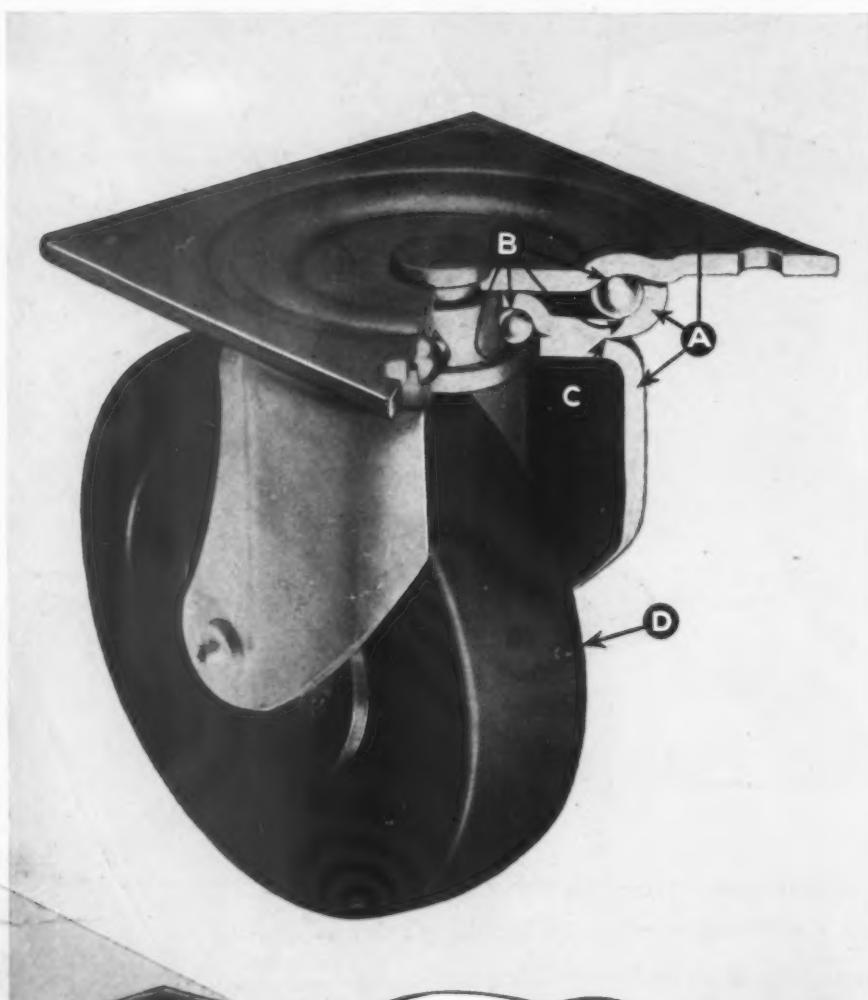
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